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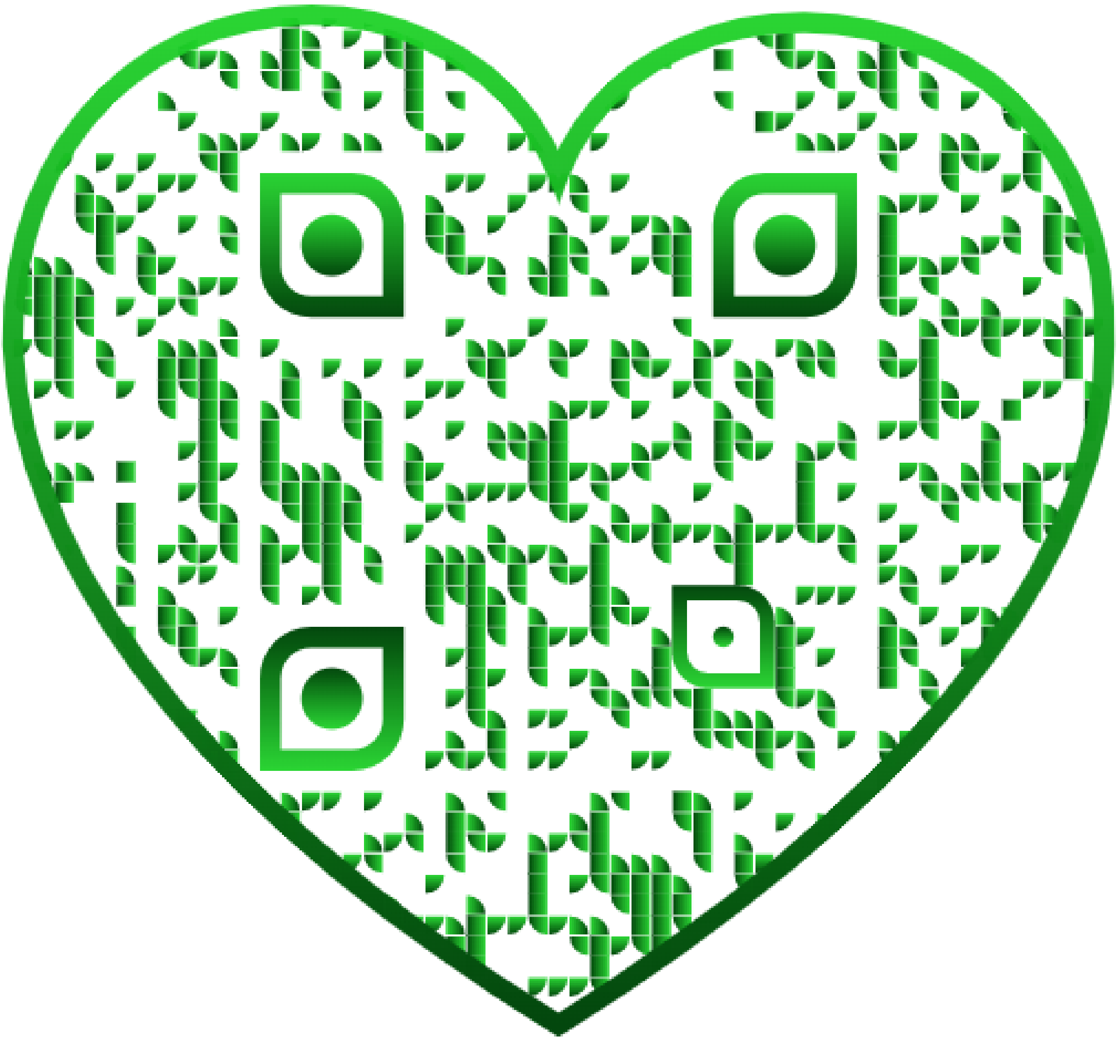

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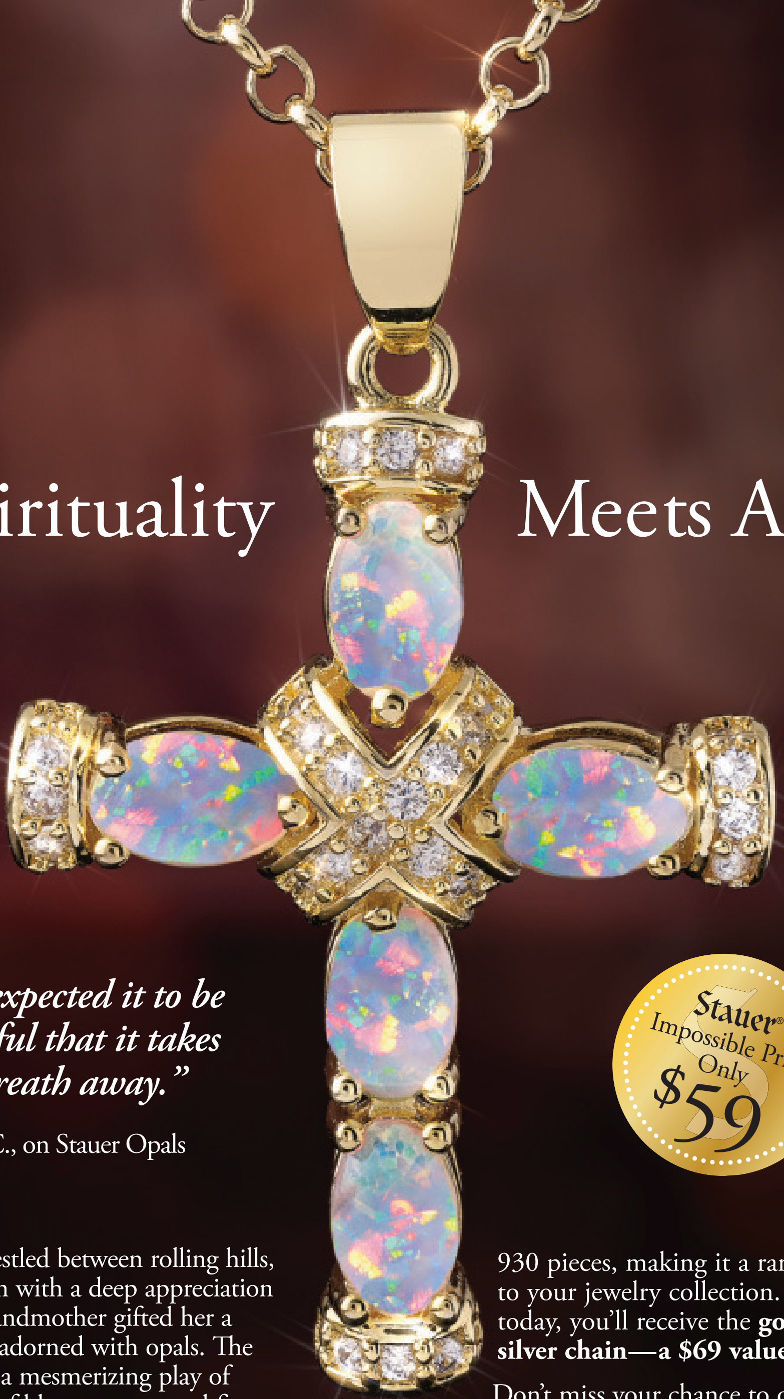

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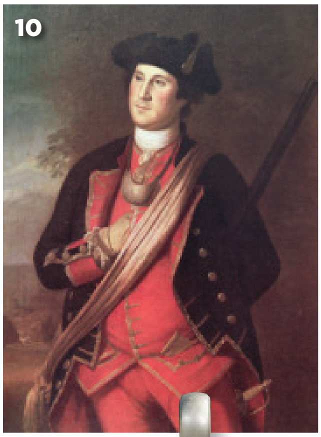
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BY ANDREW CURRY

ARCHAEOLOGY.ORG

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EDITOR'S LETTER

DRESSED TO EXPRESS

If you are a dedicated follower of fashion—or even if haute couture isn't your particular obsession—we are certain you will find many stories in this issue enchanting. Just as ancient people's artistic, domestic, and linguistic choices reveal much about their worldviews, the clothing that they wore or that was buried with them can tell archaeologists a great deal about what they valued in life. For example, two stories in our Digs & Discoveries section explore women's burials containing clothing and accessories. Although separated by several millennia and thousands of miles—one set of burials dates to third-millennium B.C. central Europe and a single burial dates to second-century A.D. China—both offer vivid looks at the role of fashion in these women's cultures. Three women found in what is now eastern Germany were buried with pierced dog teeth that researchers believe once decorated leather or fabric bags. For people of the Corded Ware culture who made these purses, they were markers of the deceased's sex and elevated social status. The young woman in China's Tarim Basin was also interred with garments that tell a story about both her personal history and that of the people she lived among at a settlement on one of the early routes of the Silk Road. The three outfits she was buried with were made in three very distinct styles, demonstrating that she inhabited a world steeped in the traditions of vastly different cultures. You'll also read about how even a god's identity can sometimes be defined by his clothes in our feature, "Temples to Tradition." An image in this story shows a statue of a hybrid Gallo-Roman deity found in France wearing a traditional Roman long-sleeved tunic and cloak, but also leggings of a type originally associated with "barbarian"—which is to say non-Roman—cultures such as the Celts. Real Romans wear tunics and togas, not trousers.

In the ancient world, as in the modern, clothing was not always a marker of sex, status, or wealth. Clothing and accessories can also be used as instruments of shame or punishment, such as a prison uniform or a scarlet letter "A." You'll find this type of punitive garment in the dramatic story of the discovery of thousands of ceramic fragments relating to the punishment of Indigenous Maya people whom the sixteenth-century Spanish cleric Diego de Landa deemed apostates. They were forced to don a yellow tunic called a sanbenito decorated with a cross, the wearer's name, and a description of the alleged crimes that branded them as heretics.

Finally, no proper outfit is complete without perfectly coiffed hair, so you won't want to miss this issue's Artifact. Recent examination of a tiny Viking-era chess piece appearsw to show that it depicts a real Viking who lived in the tenth century A.D., and whose elaborate hairstyle, impressive goatee, and curled mustache researchers believe must have been the height of fashion.

Jarrett A. Lobell
Editor in Chief

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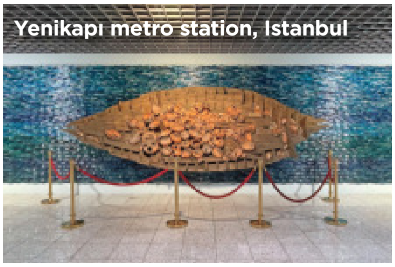
FROM THE PRESIDENT

BUILDING HISTORY

In North America and around the globe, archaeologists assess and sometimes excavate sites where new roads, subways, office buildings, and arenas—just about any major construction project—are about to be built. Following local and national laws, this work balances development with the preservation of sites that have cultural or archaeological significance. Professional archaeologists working for city, state, and federal agencies, as well as cultural resource management (CRM) firms, undertake these projects, which are often called rescue excavations. Frequently, they make important discoveries in the course of their work.


Yenikapı metro station, Istanbul

In my own field of maritime archaeology, some of these discoveries have been transformative. For example, Rome's Leonardo da Vinci Airport, begun in the late 1950s, was constructed partially over the enormous harbor built by the first-century A.D. emperor Claudius. At the time, archaeologists found multiple shipwrecks, including one of the only known examples of a tiny everyday fishing boat. Construction of a new metro station in Istanbul beginning in 2004 led to the discovery of more than three dozen ships docked in the harbor built by the emperor Theodosius at the end of the fourth century A.D. These include the first archaeological examples of Byzantine rowed warships. You can read about both discoveries at archaeology.org: Search for "Rome's Imperial Port" and "History's 10 Greatest Wrecks." Closer to home, ongoing development in downtown San Francisco often reveals the sailing vessels that brought thousands to the city in the mid-nineteenth century in search of gold.

Smaller-scale development projects lead archaeologists to uncover evidence of the past all the time. Just this year, before the construction of a family's new home, city archaeologists in St. Augustine, Florida, discovered unusual evidence for British fortifications from the late eighteenth century. I recently attended the naming ceremony for Snake Hill Parkette in Fort Erie, Ontario, which commemorates the site of an Iroquoian fishing camp, a historic Black settlement, and a field hospital used during the War of 1812. In the 1980s, CRM archaeologists assessed the area during lakefront development. Their work helped identify and repatriate the remains of 28 U.S. soldiers who fought in the war.

Many graduates of archaeology programs across North America—including many of my own former students—follow their passion for the past and its protection by working with CRM firms. These professionals recognize the impact of growth and development on our shared environment, and they work hard to forge partnerships with local and Indigenous communities to ensure their rights to preserve their cultural heritage. The stories evoked by collaborative discoveries like the ones in this and every issue of ARCHAEOLOGY invite us to remember the people who preceded us and the long histories of the places we continue to inhabit.

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Elizabeth Greene

Elizabeth S. Greene
President, Archaeological Institute of America

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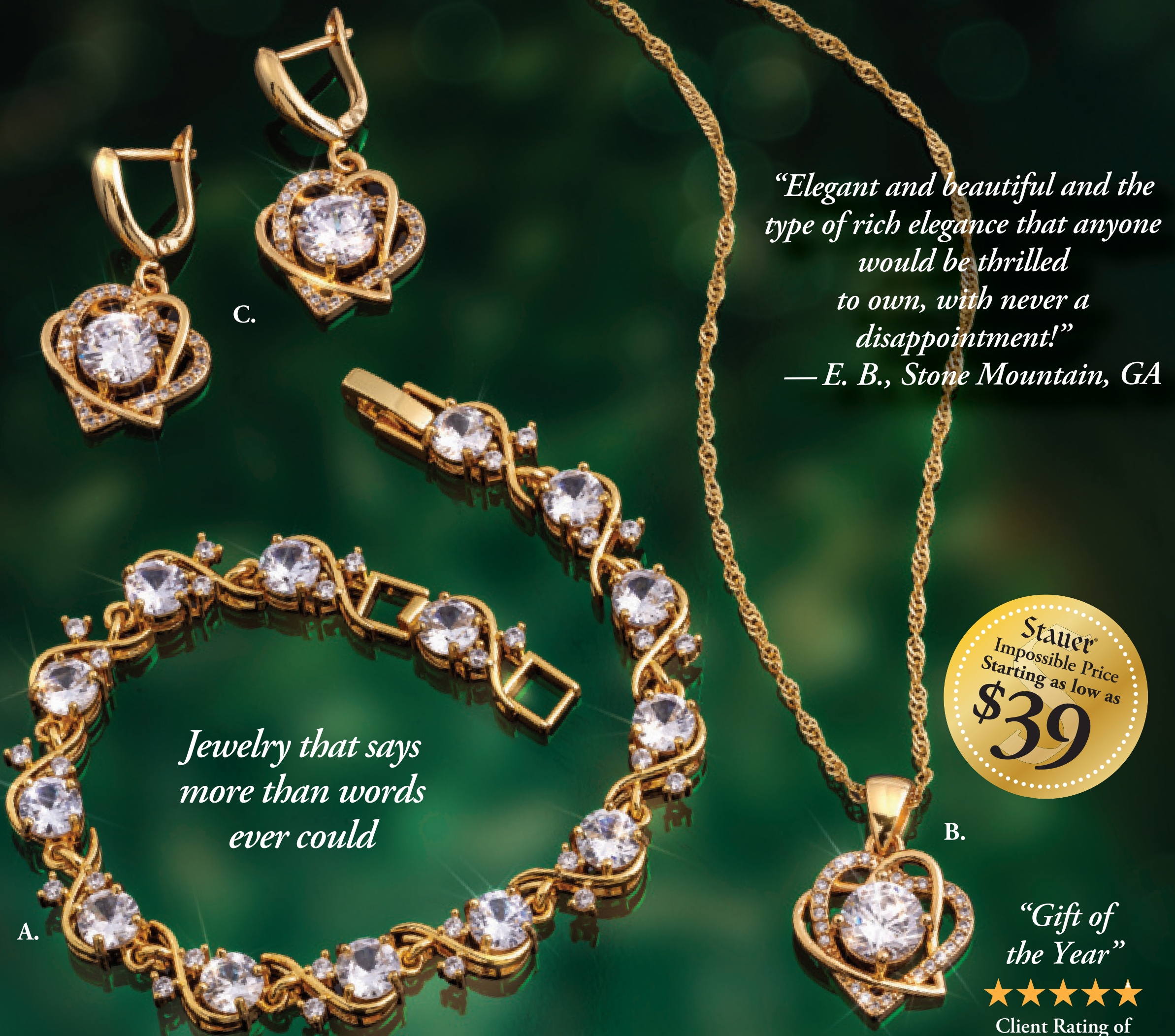

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FROM OUR READERS

IN WITH THE OLD

Thanks for the fascinating article about the world's oldest mummified person ("Spirit Cave Connection," September/October 2025). DNA testing confirmed the Northern Paiute oral tradition that the Lahontan Basin has always been their ancestral home, far longer than the 3,000 years archaeologists had believed. The archaeologists' assumption was based, in part, on changes in artifact styles. The author writes, "Researchers have often assumed that when people stopped using one style of object in favor of another, it signified that a new group had arrived." I think current researchers should now rethink that assumption. The same group, over time, can experience change in the objects it makes and how it uses them, and that does not necessarily mean that a new group has supplanted the old group. For example, thousands of years from now, will future archaeologists believe that a change in artifacts from, e.g., kerosene lanterns to electric lamps or horse-drawn carriages to cars is proof that a new group arrived on the scene? Or will they find that the prior group and its culture have simply evolved over time, similar to the Northern Paiutes?

Mary Ann Balian
Santa Cruz, CA

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EVERYTHING UNDER THE SUN

Reading about the intricate sun tokens ("Here Comes the Sun," September/October 2025) created around 5,000 years ago on Bornholm Island brought many questions to my mind. Could this be an early example of sun worship similar to the early pantheon of the ancient Egyptians? Do environmental hazards such as volcanic eruptions bring about the sun worship found in such cultures? It seems that even 5,000 years ago, people were concerned about their surrounding environment and questioning how to bring the sun back; thus, the tokens were crafted. Thank you for the interesting magazine!

Colton Kimminau
Adrian, MO

THE FRENCH CASTLE CONNECTION

Another interesting issue! "How To Build a Medieval Castle" (September/October 2025) describes a great idea: building a castle using medieval techniques showing how difficult it was and how they did it. I have often thought that without written records, archaeologists of the far future might puzzle over how medieval peasants could possibly have built castles and cathedrals. I am certain if only we had detailed records of the building of the Egyptian pyramids, too, there would be no mystery about it all.

Marian Powell
Chino Valley, AZ

Editors' note: Be sure to read "Secrets of the Seven Wonders" in this issue for some answers to the questions about one of the pyramids.

I enjoyed "How to Build a Medieval Castle" not only for the interesting subject matter, but also due to its connection to a medieval castle project in the Arkansas Ozarks. A French couple who owned rural acreage near Lead Hill, Arkansas, on a visit to Guédelon Castle, met Michel Guyot, the French entrepreneur who conceived Guédelon. They convinced Guyot to purchase some of their acreage and construct a medieval fortress in the Ozarks similar to his Guédelon project. Construction using thirteenth-century methods began in June 2009. In May 2010, the Ozark Medieval Fortress was opened to the public. In January 2012, the project closed indefinitely due to lack of funding, requiring a buyer or an investor. The site is now permanently closed, leaving only the ruins. I understand the property is still for sale.

James J. Johnston
Fayetteville, AR

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DIGS & DISCOVERIES

OLDEST EGYPTIAN GENOME, ROMAN FOSSIL FANS, BANISHING SLAVIC SPIRITS...AND MUCH MORE

IN HIS MAJESTY'S SECRET SERVICE

Palace of Zimri-Lim, Mari, Syria

Mari tablet

The relationship between archaeology and espionage is close. During the twentieth century, for example, both Britain and the United States recruited archaeologists working in some of the world's most sensitive locales as spies. Beginning in 1911, T. E. Lawrence excavated the Hittite site of Carchemish on the Euphrates River, from where he could keep an eye on the Germans, who were constructing a railway supply line between Baghdad and Berlin. During World War I, the renowned scholar of the ancient Near East Gertrude Bell often worked alongside Lawrence in the Arab Bureau of British intelligence in Cairo. Mesoamerican archaeologist Sylvanus Morley was Agent No. 53 of the U.S. Office of Naval Intelligence during World War I in Central America and Mexico. Archaeologist Jack Caskey, head of the classics department at the University of Cincinnati and director of the American School of Classical Studies at Athens, was employed by the Office of Strategic Services (OSS), the precursor to the CIA. And the world's most famous fictional archaeologist was also a spy. Indiana Jones worked for the OSS during World War II, hunting down artifacts before the Nazis could get their hands on them.

The links between archaeology and espionage aren't limited to the twentieth century. The professions are also linked in the tablets of ancient Mesopotamia, especially those dating to the Old Babylonian period (2017–1595 B.C.), which contain a wealth of information about spy craft. "The Old Babylonian period is characterized by a shift of power from the dominance of southern Mesopotamian city-states to the rise of multiple competing powers in the north," says Assyriologist Sergio Alivernini of the Oriental Institute of the Czech Academy of Sciences. "There were lots of different states, lots of conflict, and a huge demand for information. So there were lots of spies."

This was especially true for the Kingdom of Mari (ca. 2900–1762 B.C.) in eastern Syria. Mari's strategic location on the western bank of the Euphrates River, at the center of trade routes between the cities of Sumer to the south and the Kingdom of Ebla and the Levant to the west, made it invaluable—and vulnerable. Given his kingdom's political and geographic position, Zimri-Lim, Mari's ruler from 1775 to 1762 B.C., became an enthusiastic spymaster.

Hundreds of surviving letters between Zimri-Lim and his officials reveal that he established a centralized system of spies and informants of which he was chief. The king's immensely powerful private secretary, Šunuhra-Halu, along with the queen, Šibtu, often acted as intermediaries. Mari's spies were tasked with gathering both military and political intelligence. "Military intelligence aimed at controlling political entities hostile to Mari was intended to obtain a short-term advantage in the case of a battle, for example," Alivernini says. "Political intelligence was collected to determine how both allies and enemies were behaving, and to anticipate political developments that could create risks and opportunities to consolidate Mari's position on the wider Near Eastern stage."

Alivernini has identified different types of intelligence gatherers in Zimri-Lim's exchanges. These include *makûm* and *naṣrum*, professional spies sent from Mari specifically to collect information. There were also *aḫītum*, or "secret sources," and *tukkum*, or "voices." Alivernini calls these types of informers "occasional spies." This could include diplomats, who might have access to privileged information. One tablet records Mari's ambassador to Babylon, Yarim-Addu, informing Zimri-Lim about the machinations of the Babylonian king Hammurabi (reigned 1792–1750 B.C.). Another is a letter from Šarrum-ṣululi, a commander stationed in Babylon, recounting his efforts to corrupt two of Hammurabi's courtiers to gain information. In addition, *ša lišānim*, *munnabtum*, and *āḫizum*—deserters, asylum-seekers, and prisoners of war—might pass on intelligence about the kingdom's enemies.

Zimri-Lim also had to be aware of spies embedded in his own court. A letter to the king from an official named Yamṣum says that he has learned from a man named Kunnam—who was drunk when he let it slip—that the Kingdom of Elam in Iran had access to information about Zimri-Lim's court. This intel was obtained by Kunnam from a Hanaean, a man of seminomadic background who belonged to Zimri-Lim's entourage. "There are those who keep letting the word of my lord go out, and my lord must call them to account," writes Yamṣum. "Kunnam never tells lies."

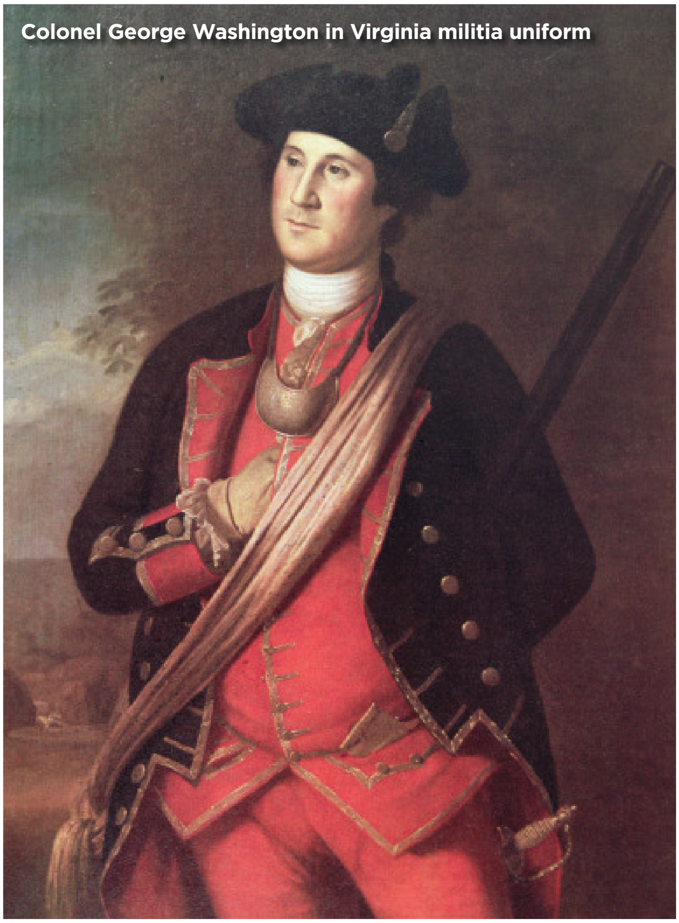
—Jarrett A. Lobell

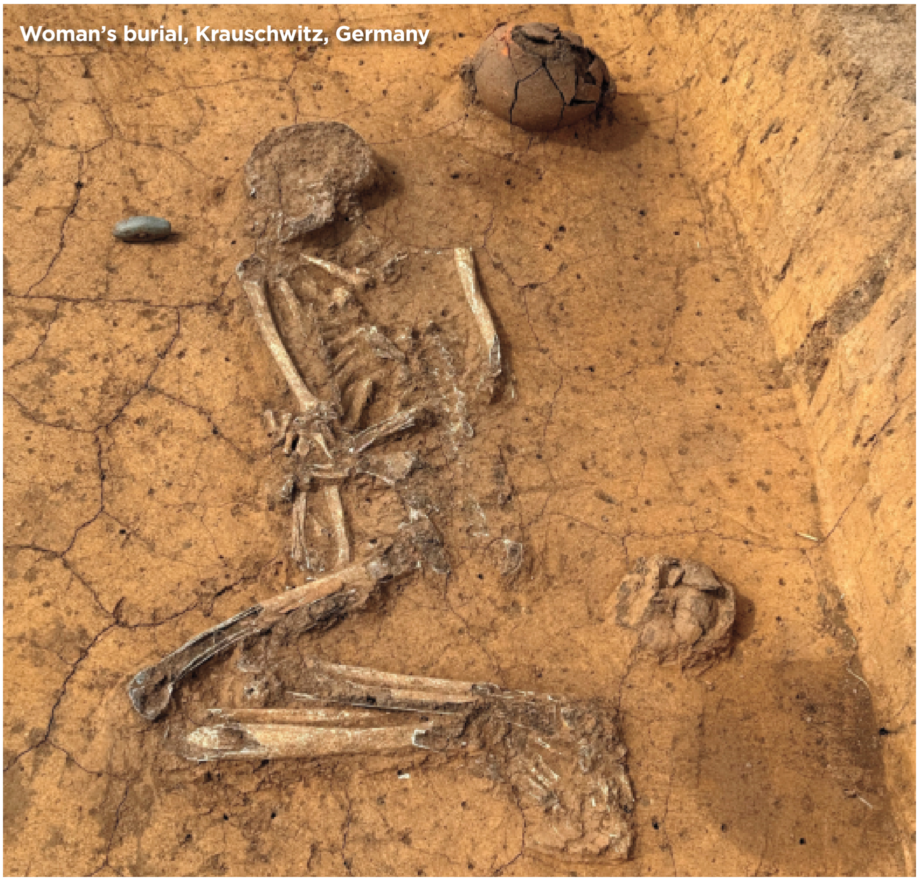
WASHINGTON RISKS IT ALL

Had the events of November 12, 1758, unfolded differently, they could have forever altered the course of American history. On that day, a 26-year-old George Washington nearly lost his life in a friendly-fire incident during the French and Indian War. (See "Exploring the Great Warpath," September/October 2019.) Fighting for the British, Washington was leading a Virginia militia regiment against a French raiding party in western Pennsylvania when fog and miscommunication resulted in two Virginia battalions firing upon each other. Colonel Washington risked his life by riding out between the groups to shout for a ceasefire, knocking aside muskets with his sword. When the smoke cleared, 14 men had died, and dozens were wounded. The battlefield was lost to history until archaeologists located it near Fort Ligonier. There, the team uncovered hundreds of objects including bullets, buttons, buckles, and even an ornate French watch key. Researchers have used metal detectors, geophysical survey, drone imaging, and mapping software to help reconstruct the day's events. The incident haunted Washington throughout his later years and he recalled it as the time he came closest to death as a soldier. "This little-known event was the last combat action Washington saw before accepting the role of commander in chief of the Continental Army," says Juniata College archaeologist Jonathan Burns. "I am sure that it influenced his growth as a military leader."

—Jason Urbanus

Bullets, buttons, and buckle


Colonel George Washington in Virginia militia uniform

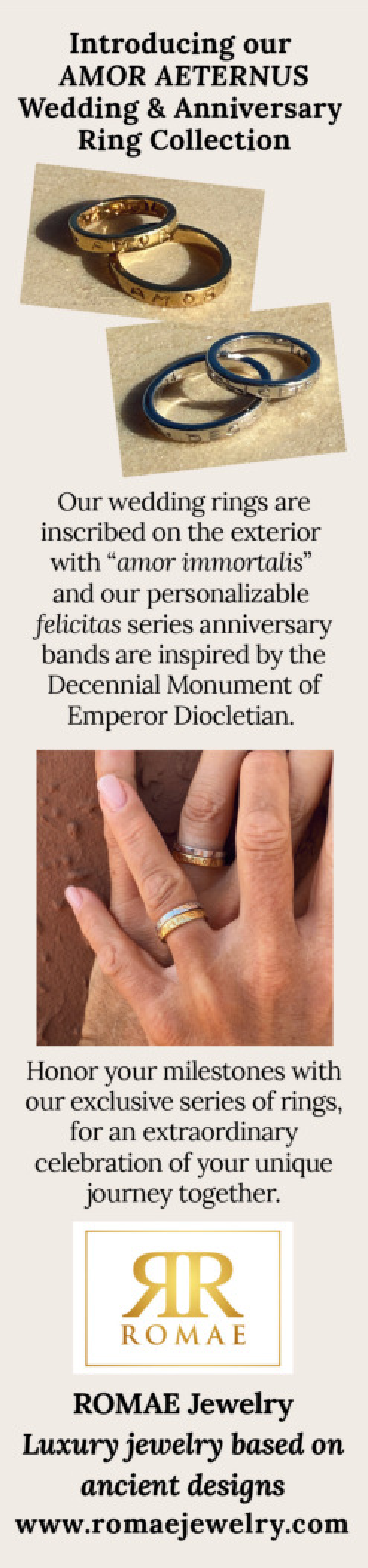

Woman's burial, Krauschwitz, Germany

CANINE COUTURE

A decorated bag used to carry something particular, or for a special occasion such as a night on the town, is often used to signal wealth and status. This seems to have been true as well for members of the Corded Ware culture, which spread throughout Europe in the third millennium B.C. During installation of a power line in the eastern German town of Krauschwitz, archaeologists discovered 15 Corded Ware burials of men and women interred with distinct sorts of artifacts. "People in this period differentiated men from women by including certain types of objects, such as axes for men and jewelry for women, in their graves," says archaeologist Oliver Dietrich of the State Office for Heritage Management and Archaeology Saxony-Anhalt.

Three women were found alongside pierced dog teeth, some of which are thought to have once decorated leather or fabric bags. Such bags, which may have been used as baby carriers, have only been found in elite women's graves. According to Dietrich, dogs may have been bred specifically to produce teeth suitable for use as decoration or jewelry. "Due to the effort required to procure the dog teeth and make the pouches, as well as their visual effect, they are most likely markers of high social status," he says. Dogs seem to have been extremely significant to people of the Corded Ware culture. Archaeologists have found human burials including dogs, as well as dogs buried on their own, perhaps as sacrifices. "Burials and sacrifices strongly speak in favor of dogs' important role in the belief system of the Corded Ware culture and also of emotional bonds with the animals," says Dietrich. "You only sacrifice things that are important to you."

—Jarrett A. Lobell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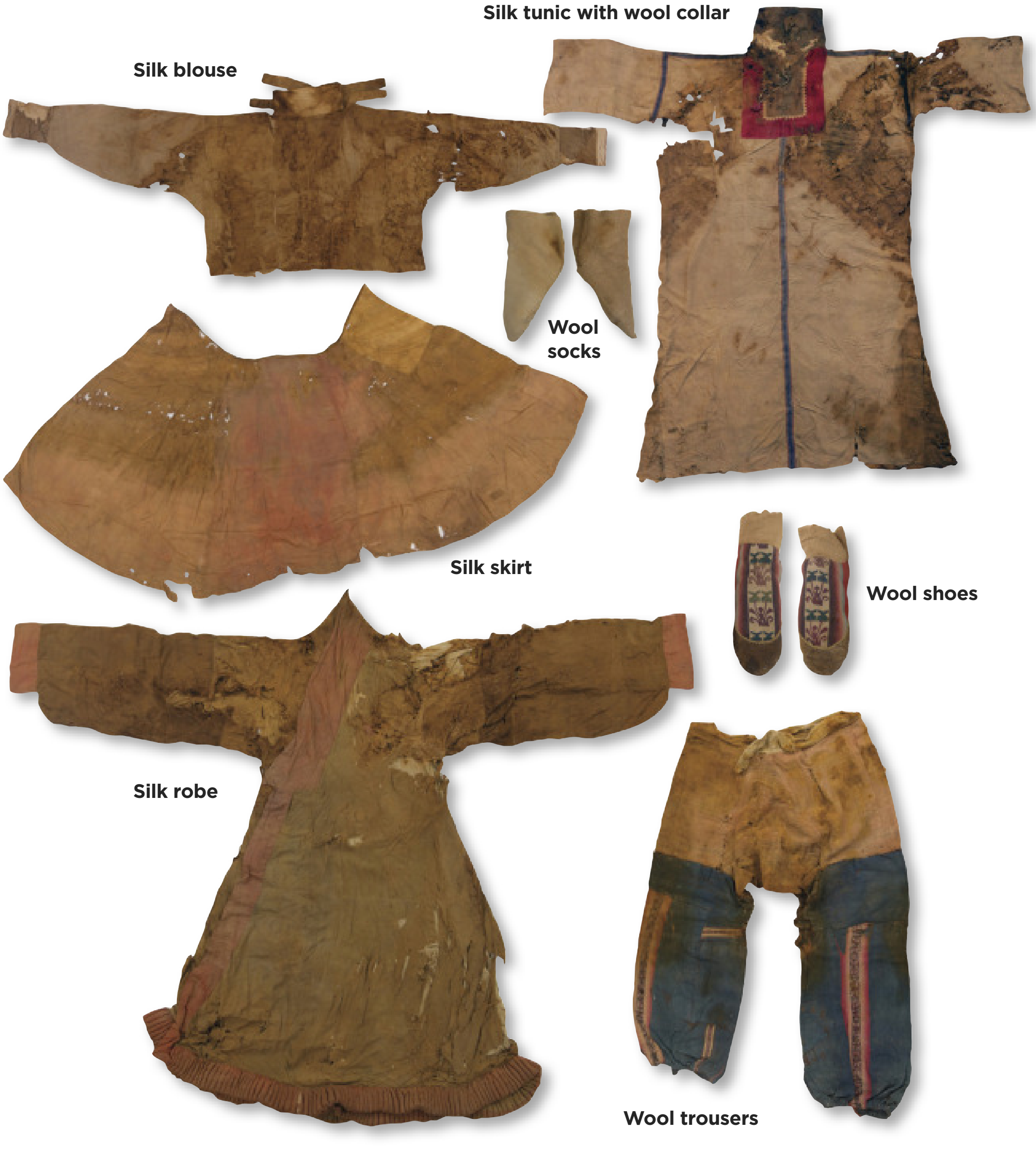
ANCIENT LOOK BOOK

A young woman buried in China's Tarim Basin some 2,000 years ago went to the afterlife accompanied by the height of fashion. The woman, who was wrapped in a felt blanket and buried in a coffin fashioned from a tree trunk, was equipped with three outfits made using starkly contrasting styles that sprang from different sartorial traditions. Recently, a team led by archaeologist Mayke Wagner of the German Archaeological Institute and scholars from the Xinjiang Academy of Cultural Heritage reinvestigated the garments, which were excavated 30 years ago at the site of Niya, an oasis settlement that lay on one of the early Silk Road routes connecting China and western Eurasia. The team radiocarbon dated the pieces to between A.D. 60 and 130 and then made faithful copies. The garments include an ensemble made in the style of the Parthian people of Iran consisting of a silk tunic with a wool collar, wool shoes, and wool trousers. This outfit is accompanied by a silk robe reminiscent of Chinese gowns and a silk blouse and skirt cut in a fashion similar to local woolen styles. "Every piece of her outfit surprised and impressed us," says Wagner. "Most fascinating for me, perhaps, was the combination of airy silk with earthbound wool."

Wagner notes that the stylish garments, which would have been considered haute couture at the time, seem out of place in the woman's humble burial. "Her delicate clothing suggests that she was a prominent social figure," she says, "but the felt blanket and tree-trunk coffin are commonly associated with burial practices in steppe environments inhabited by shepherds." Just as her blouse and skirt combined local style with cosmopolitan Chinese fashion, her burial indicates that the young woman was probably adept at moving between very different cultures.

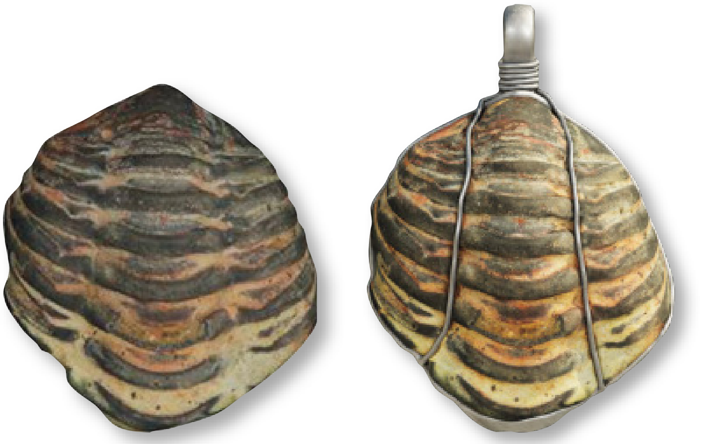
For images of re-creations of the Niya garments, go to archaeology.org/niya.

—Eric A. Powell



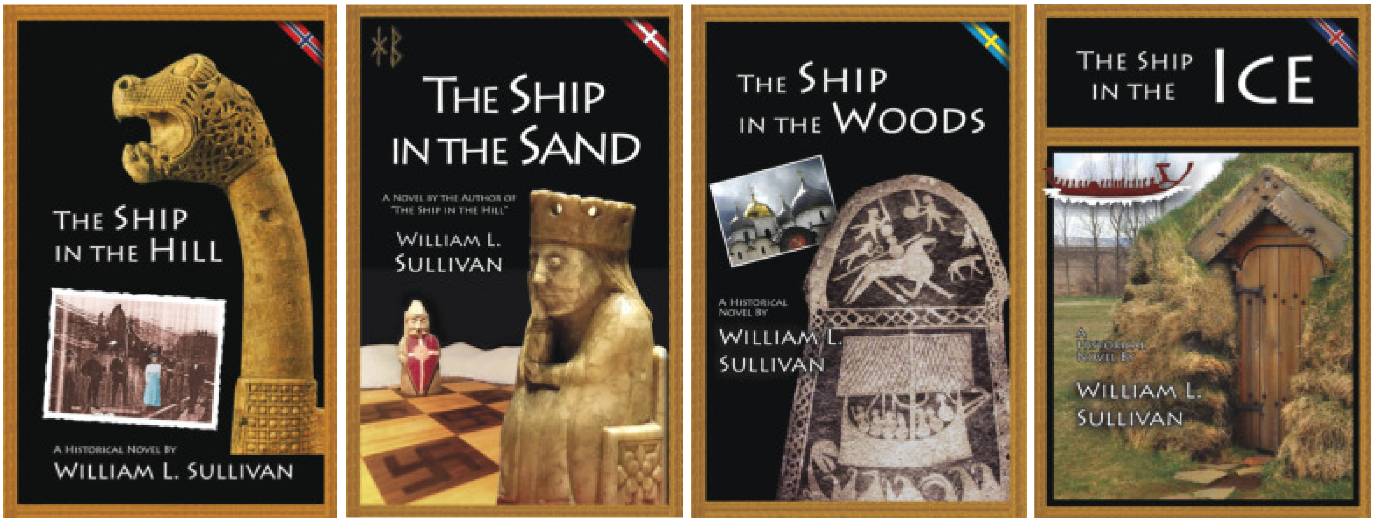
FOSSIL FORCE

One of the planet's most successful arthropods, trilobites, abounded in the oceans from about 520 million to 250 million years ago. Trilobite exoskeletons are found on all seven continents and are a familiar sight in textbooks and museums the world over. Ancient Romans were also fascinated by these ubiquitous fossils. Classical authors, including the first-century A.D. Roman historian Pliny the Elder, mention trilobites, and archaeologists have found many examples of Roman glass and jet beads that take their characteristic shape. Yet no trilobite fossil had ever been found at a Roman site until a team led by University of Vigo archaeologist Adolfo Fernández-Fernández unearthed one measuring an inch long in a trash deposit in the Roman city of Armea in northern Spain.


Trilobite fossil (left) and simulated trilobite fossil pendant (right)

The team's analysis indicates that the fossil has seven deliberately cut facets, possibly made to fit within a pendant or bracelet. This suggests it may have served as a magical amulet. "The existence of beads imitating trilobites indicates the high value these fossils had as protective elements," says Fernández-Fernández. "It's difficult to know why these objects appear in classical texts and yet are so rare in the archaeological record." The team also encountered a subtle historical coincidence. The trilobite fossil was found close to a bronze coin stamped with the profile of the emperor Augustus (reigned 27 B.C.–A.D. 14), who was recognized as an avid fossil hunter and founded the world's first known paleontological museum.

—Eric A. Powell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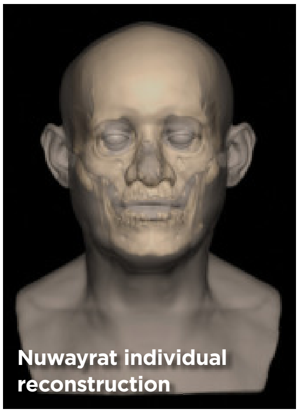
THE EGYPTIAN SEQUENCE

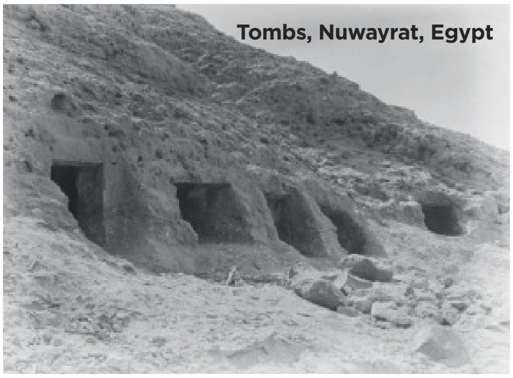
Until now, the earliest Egyptians to have even part of their DNA sequenced were three people who lived between 787 and 544 B.C. A team including geneticist Adeline Morez Jacobs of Liverpool John Moores University has pushed that record back thousands of years and sequenced the complete genome of a man who lived as early as 2855 B.C., during the first days of the Egyptian dynasties. Morez's team analyzed the man's remains, which were discovered in 1902 buried in a large pottery vessel inside a rock-cut tomb at the site of Nuwayrat, 170 miles south of Cairo.

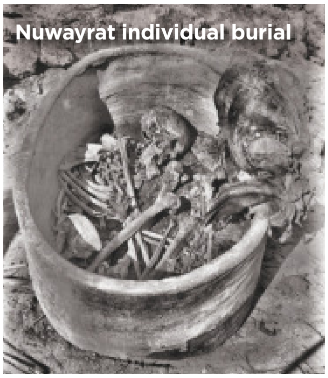
The site's tombs contained many people's remains, some of which were brought to England. But it was only from this man, known as the Nuwayrat individual, that researchers were able to retrieve sufficient genetic material from the roots of two teeth to sequence a complete genome. Ancient Egyptian DNA has proved exceedingly difficult to recover due to the region's extreme heat, which degrades genetic material. "In the Nuwayrat individual's case, the burial vessel may have shielded his remains and preserved his DNA," says Morez. "We were very lucky to find the golden individual who had enough DNA in good enough condition." While some studies have suggested that Egyptian populations had little to no genetic influence from outside groups, the team's results show that 20 percent of the individual's genome derives from the Fertile Crescent, including Mesopotamia. The other 80 percent of his ancestry derives from North Africans.


Nuwayrat individual reconstruction

Until 1941, Liverpool's World Museum, where some remains taken from Nuwayrat were housed, contained one of the largest collections of Egyptian remains outside Egypt. On May 3, 1941, the Luftwaffe bombed the city heavily and the museum caught fire. Much of its collection was destroyed, including some of the remains belonging to people originally buried at Nuwayrat. Fortunately, the Nuwayrat individual wasn't among the casualties as he was safely housed at the University of Liverpool at the time. "He's a blitzkrieg survivor," says Morez. "For that, too, we're very lucky."

—Jarrett A. Lobell


Tombs, Nuwayrat, Egypt


Nuwayrat individual burial

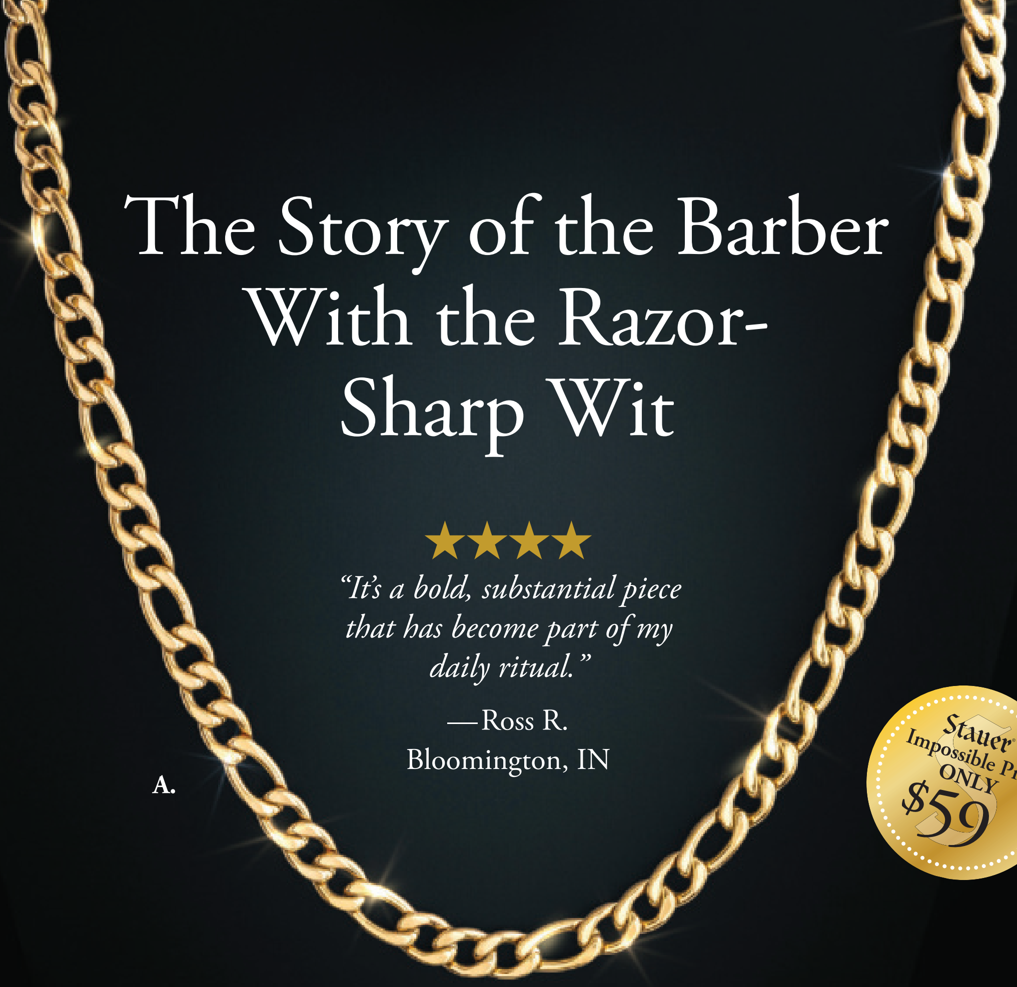
BYOB(OAR)

Eleven thousand years ago, early Neolithic people who gathered at the site of Asiab in the Zagros Mountains of western Iran brought their own boar meat to contribute to communal feasts. Archaeologists uncovered 19 wild boar skulls that displayed clear signs of butchery neatly packed in a pit at the site. A team of researchers conducted dental and geochemical analysis on some of the boars' teeth to determine where the animals may have originated. Although Asiab's environment provided a natural habitat for boars, the animals consumed there came from various distant locations, some as far as 40 miles away. Transporting a heavy boar carcass across the mountainous terrain would not have been an easy task, especially as the journey must have taken several days.

Scholars believe it was important for Neolithic hunters to bring offerings to festivities that were sourced from specific locations. Archaeologist Petra Vaiglova of the Australian National University likens this behavior to today's custom of bringing a special delicacy or present to a hometown holiday get-together. "This new research provides really exciting insight into the longevity of gift giving and the antiquity of bringing geographically meaningful contributions to social gatherings," says Vaiglova.

—Jason Urbanus

Wild boar, Iran



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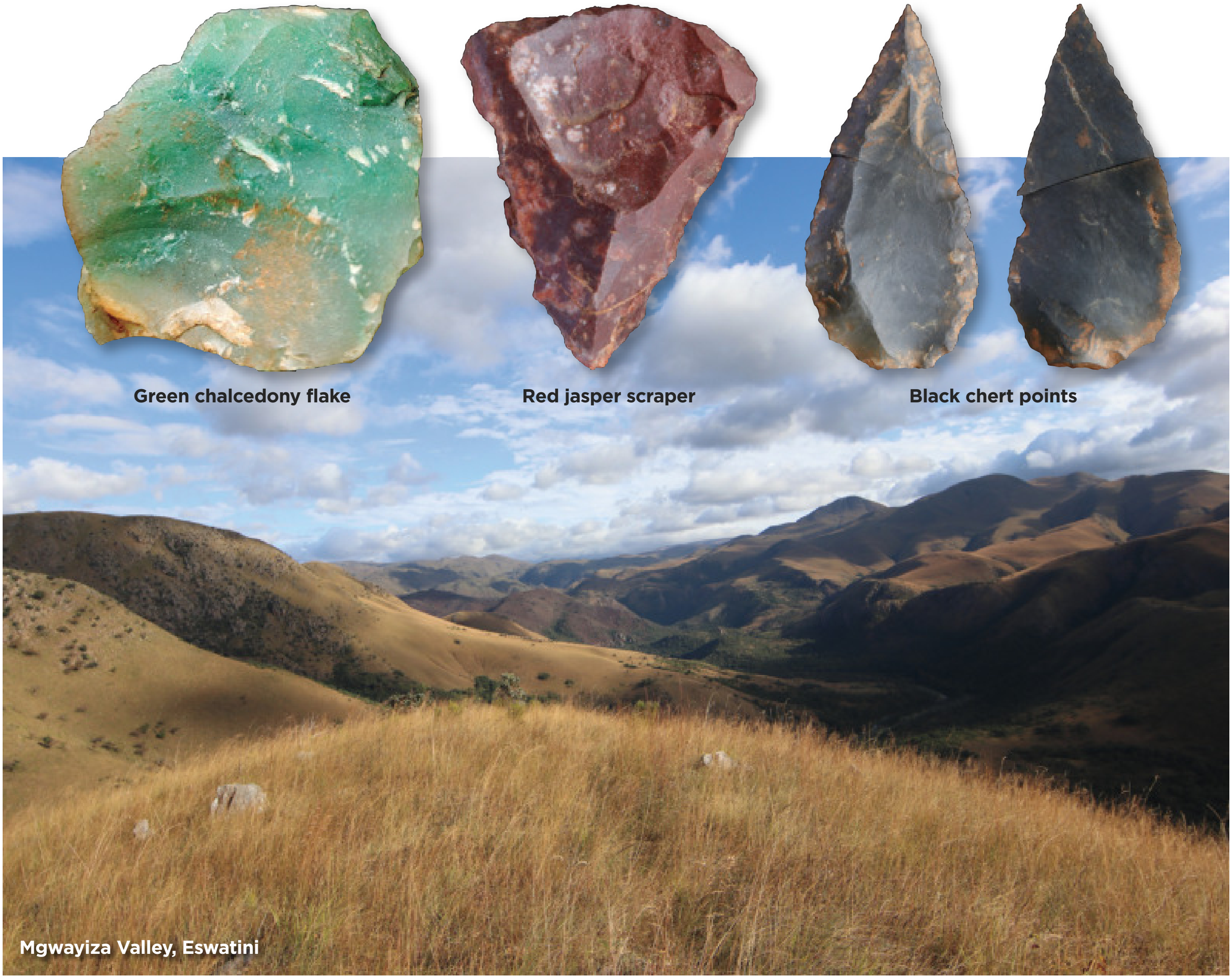
SOURCE MATERIAL

As early as 40,000 years ago, some hunter-gatherers in southern Africa ventured long distances to procure special types of stone to make their tools. Although these groups primarily fashioned blades and scrapers from quartz, tools knapped from colorful green, red, and black varieties of chert have been excavated at sites in Eswatini. A team of researchers led by University of Tübingen archaeologist Gregor Bader surveyed the Mgwayiza Valley to locate the sources of stone used to make tools recovered at four of these sites. They identified natural outcrops of two types of chert—green chalcedony and red jasper—within 2.5 miles of each other. Using neutron activation analysis, the team confirmed that the geochemical fingerprints of the stone in the outcrops matched elements in the green and red chert tools. The precise source of the black chert has not been identified.

While some groups lived within a day's hike of the outcrops, others would have had to travel up to 60 miles over rough terrain to reach these sources. "People either transported the raw materials in a single trip or kept them over longer periods and made tools out of them," Bader says. Hunter-gatherers living farther from the outcrops, he says, may also have relied on exchange networks to obtain the stones. "I think this is indirect evidence that the materials held a certain value," says Bader. He believes the stones' vibrant colors might have been a factor in people's changing preferences over time. Green chalcedony seems to have been especially prized for toolmaking until about 30,000 years ago. After that, craftspeople stopped using chalcedony and turned to red jasper as the preferred material.

—Benjamin Leonard



Green chalcedony flake

Red jasper scraper

Black chert points

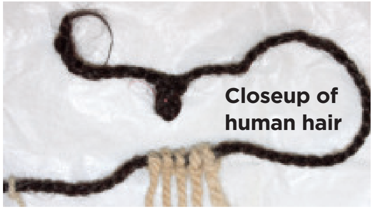
Mgwayiza Valley, Eswatini

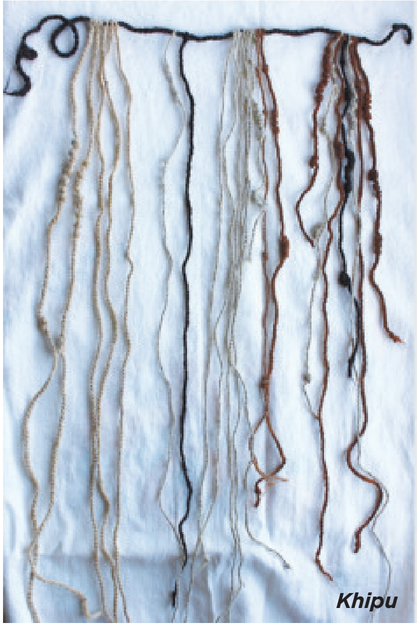
A KNOTTY PROBLEM

New analysis of a uniquely Inca recordkeeping device, known as a *khipu*, has changed archaeologists' conception of the individuals who created and maintained them. These objects consist of a series of intricately knotted cords typically made from animal hair. They were used to record numerical information such as dates, inventories of goods, and tax data. Khipus were instrumental in the administration of the Inca state and it has long been thought that *khipukamayuqs*—or khipu makers—were educated elites.

However, this may not be the case, according to recent analysis of a 500-year-old khipu held by the University of St. Andrews. Researchers noticed that a large portion of the artifact was woven from human hair that was the product of eight years of growth. "The presence of the khipukamayuq's hair suggests that this khipu recorded something important and very personal, such as the offerings that this individual made at different shrines," says archaeologist Sabine Hyland of the University of St. Andrews. The team was surprised that isotope analysis of the strand revealed that the khipukamayuq did not eat meat or maize, foods usually consumed by the Inca upper classes. Instead, the person dined on tubers, greens, and other plants—typical fare of Inca commoners. This has led researchers to conclude that numerical literacy, which was a requirement for khipukamayuqs, was more widespread in Inca society than previously believed.

—Jason Urbanus


Closeup of human hair


Khipu

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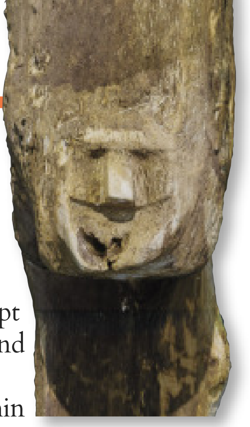
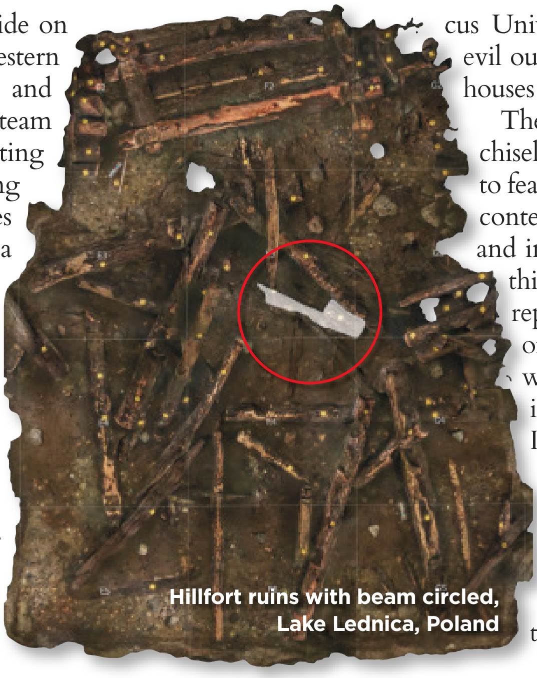


Carved beam

In the early eleventh century, a landslide on the island of Ostrów Lednicki in western Poland caused a hillfort to collapse and slip to the bottom of Lake Lednica. A team of underwater archaeologists investigating the submerged ruins discovered a carving of a human face measuring 4.7 inches high by 3.5 inches wide at the end of a wooden beam. According to medieval chronicles, sculptures of animals and people adorned gates and palisades of Slavic settlements as well as temple interiors. However, these depictions rarely survive in the archaeological record. Researchers believe this carving may portray a deity, hero, or ancestor whose image might have safeguarded the settlement's inhabitants against malicious spirits. "Protective gods and goddesses were present everywhere," says archaeologist Andrzej Pydyn of Nicolaus Copernicus University. "They kept evil outside sanctuaries and houses of settlements."

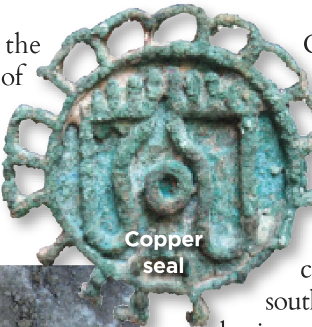
The eyes, nose, and chin chiseled into the beam are strikingly similar to features of sculpted faces found at roughly contemporaneous sites elsewhere in Poland and in Russia, Pydyn says. He suggests that this depiction was part of a local stylistic repertoire. Dendrochronological analysis of the beam indicates that the tree from which it was fashioned was likely felled in A.D. 967. A year earlier, Mieszko I (reigned ca. A.D. 960–992), ruler of the first unified Polish state, had been baptized, initiating the spread of Christianity throughout the country. "This discovery shows that traditional pagan beliefs were kept even after the transition to Christianity began," says Pydyn.

—Benjamin Leonard



Hillfort ruins with beam circled, Lake Lednica, Poland

ON HER OWN TWO FEET



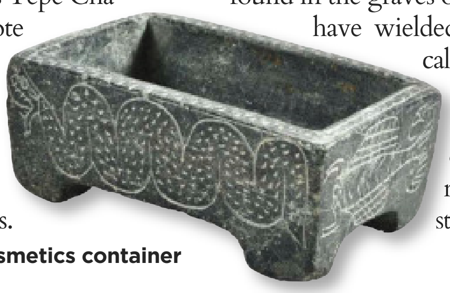
Copper seal

Until the 1970s, the Bronze Age culture of the Oxus, or Greater Khorasan Civilization (GKC), of Central Asia was virtually unknown to scholars. (See "An Oasis Civilization Rediscovered," January/February 2021.) Excavations have since shown that this culture flourished from about 2300 to 1700 B.C. and was composed of urban settlements concentrated primarily in southern Uzbekistan and neighboring regions. A team led by archaeologist Ali Vahdati of the General Directorate of Cultural Heritage of Iran's North Khorasan Province recently excavated the westernmost known GKC settlement, a site of about 100 acres in the desert of northern Iran known as Tepe Chalow. Despite its remote location, the settlement was a rich trade hub that was home to specialized metalworkers and stone carvers, along with herders and farmers.

At Tepe Chalow's necropolis, the team unearthed 38 burials, the most lavish of which belonged to a woman who was no older than 18 when she died. Among the 34 objects buried with her was a cosmetics container fashioned from greenstone and decorated with snakes and scorpions. These motifs were likely associated with beliefs about the afterlife. A two-inch-wide copper seal engraved with depictions of two footprints was also buried with the woman. Scholars believe such seals were symbols of authority used to validate contracts. Vahdati notes that in the core areas of the GKC, seals are often found in the graves of women who may have wielded significant political influence. "Women in the world of the GKC were not necessarily subject to rigid patriarchal constraints," he says.

—Eric A. Powell

Grave, Tepe Chalow, Iran



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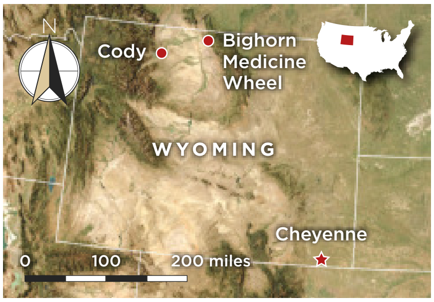
OFF THE GRID BY MATT STIRN

BIGHORN MEDICINE WHEEL, WYOMING

Perched almost 9,700 feet above sea level on Medicine Mountain in Wyoming's Bighorn Range, the Medicine Wheel is an 80-foot-diameter circular structure made from limestone boulders. Twenty-eight spokes radiate from a central cairn, and six additional cairns are positioned around the wheel's perimeter. While more than 100 similar circular stone monuments have been found throughout the Rocky Mountains in the United States and Canada, the Medicine Wheel is the best preserved and among the largest. Since the site was first described in 1902 by ethnologist S. C. Simms of the Field Museum, archaeologists have sought to discover when and why the wheel was built. "The Bighorn Mountains have been home to American Indian culture for over 12,000 years," says retired U.S. Forest Service archaeologist Dave McKee. Despite this long history of human connection to the Bighorn Mountains, excavations at the Medicine Wheel have suggested that it might have been constructed just a few hundred years ago. In the 1950s, researchers from the Wyoming Archaeological Society excavating inside the structure recovered pottery and European glass beads dating to the early nineteenth century. Archaeologists also found wood fragments dating to the 1760s within several cairns, suggesting that tall poles might have once stood inside them. These features have been noted in other medicine wheels.

Some scholars have suggested that the Medicine Wheel was used by precontact Native peoples as an astrological calendar, while others have proposed that it was built as a hoax by French or Russian explorers. It wasn't until archaeologists began to consider Native American oral histories alongside their research that they arrived at a more accurate understanding of the monument. Both the Shoshone and Crow peoples believe that high-elevation landscapes are sacred places where people can connect with ancestors to receive wisdom about how to navigate the future. Red Plume, a Crow leader of the early nineteenth century, told ethnographers that to seek help fighting European settlers, he spent four days at the center of the Medicine Wheel, from where he was eventually led into the mountain itself by spirits who taught him how to become a powerful warrior and chief. Just as Red Plume sought guidance at the Medicine Wheel in the past, many Native Americans today continue the traditions of their ancestors by hosting spiritual ceremonies among the stones.

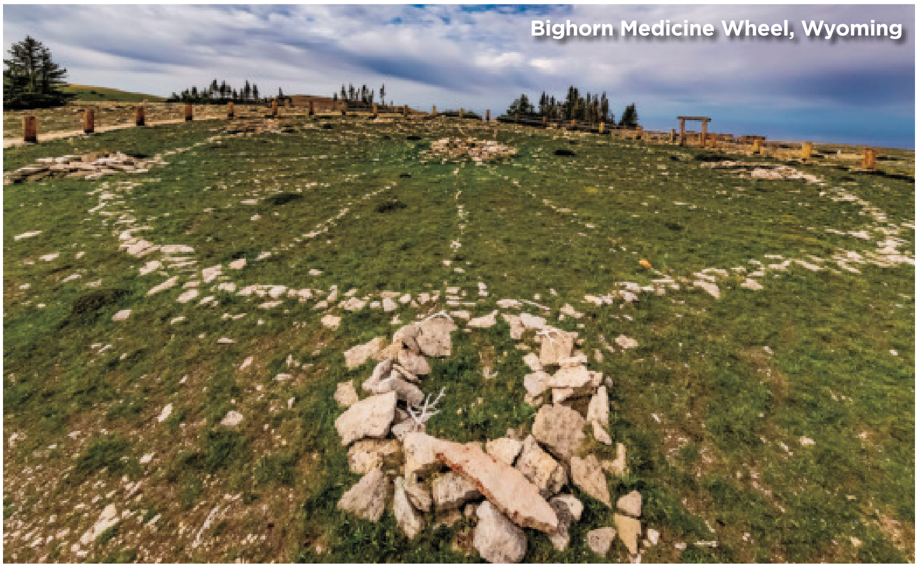


THE SITE

The Medicine Wheel/Medicine Mountain National Historic Landmark consists of more than 4,000 acres of mountain habitat. To reach the Medicine Wheel, visitors walk from a parking lot along a 1.5-mile path guided by interpretive signs about the Native history of the Bighorn Mountains. Rangers are often present to lead tours and can occasionally arrange for people with mobility challenges to drive closer to the site. The monument is sometimes closed during Native American ceremonies, but generally reopens for visitation within an hour. "Providing access for ceremonies ensures continuity of Indigenous cultural practices for current and future generations," says McKee.

WHILE YOU'RE THERE

The Medicine Wheel is an easy day trip from the town of Cody near the eastern border of Yellowstone National Park. The historic Irma Hotel in downtown Cody was built and owned by famed gunslinger Buffalo Bill, and the town's Buffalo Bill Center of the West offers an array of exhibits covering local geology, history, and archaeology. For those seeking a more immersive trip into the Bighorn Mountains, the Cloud Peak Wilderness in the southern portion of the range offers several backpacking routes through mountain meadows and snowcapped peaks.



Bighorn Medicine Wheel, Wyoming

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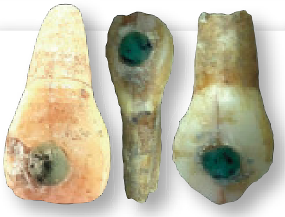
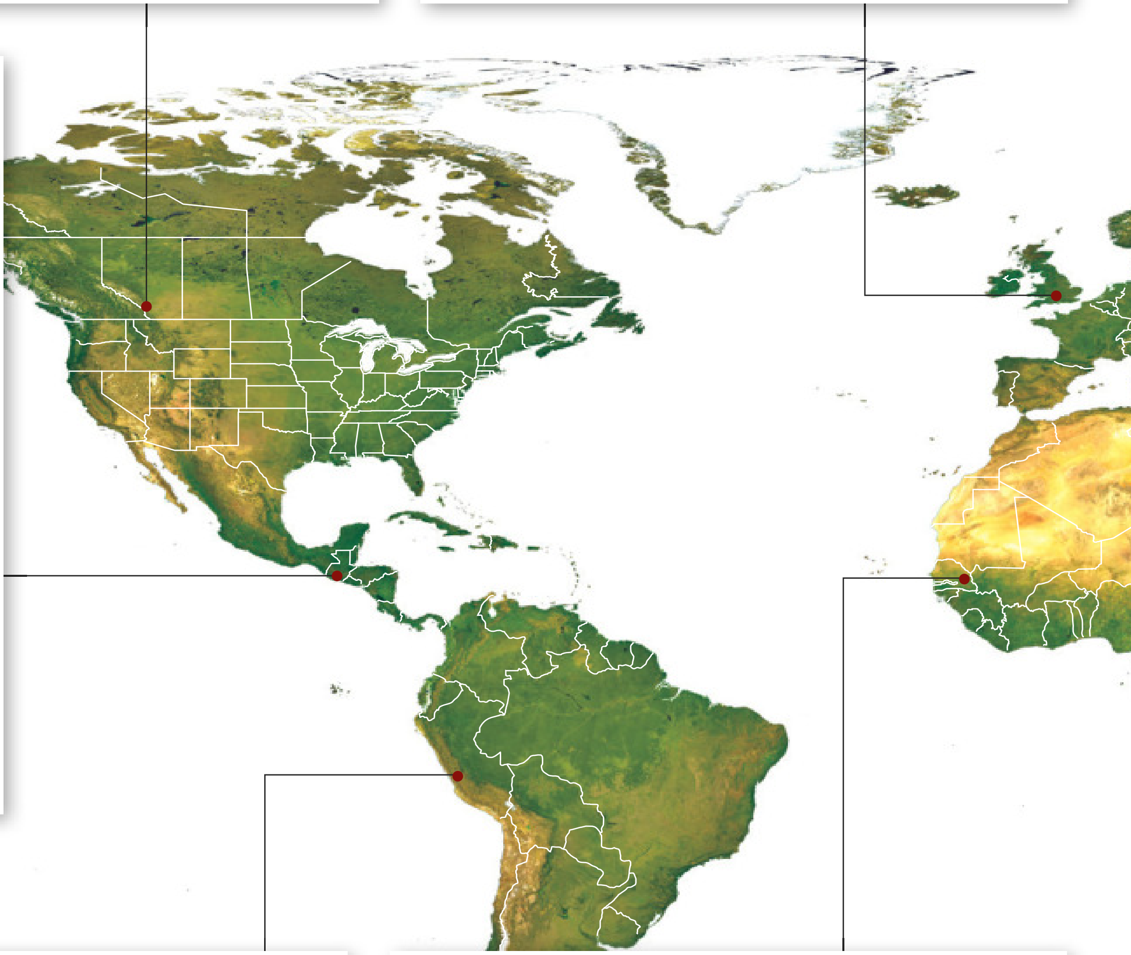
AROUND THE WORLD BY JASON URBANUS

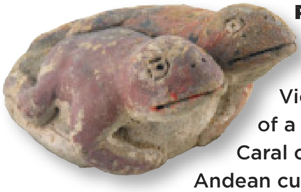
CANADA: Excavations on a property that once belonged to legendary Black cowboy John Ware have revealed new details about his family's domestic life. Ware was born into slavery in the United States but settled near the hamlet of Millarville, Alberta, in 1882, becoming one of the region's first non-white ranchers. Archaeologists uncovered personal items attesting to a level of affluence not previously attributed to the Wares. These include decorative glassware, an English ink bottle, and a thimble engraved with the word "REMEMBER."

ENGLAND: Evidence from Cookham Abbey suggests the 8th-century A.D. Anglo-Saxon monastery may have served as one of England's earliest hospices, specializing in end-of-life care for people afflicted by debilitating ailments. Analysis of skeletons excavated from the abbey's cemetery revealed that the majority of the deceased displayed signs of rare and severe conditions. More than 10 percent suffered from cancer, an unusually high portion. It seems likely that the facility ministered to people from across the area and not just to local residents.



GUATEMALA: It's well known that the Maya practiced dental modification, but scholars thought that such procedures were only performed on adults. A new study at the Popol Vuh Museum of 3 teeth inlaid with jade determined that the teeth belonged to 3 different Maya individuals between 8 and 10 years of age. It's not clear why these particular children were subjected to this practice, but the custom was apparently carried out on at least some preadolescents.

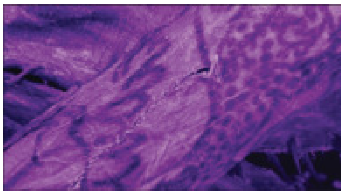




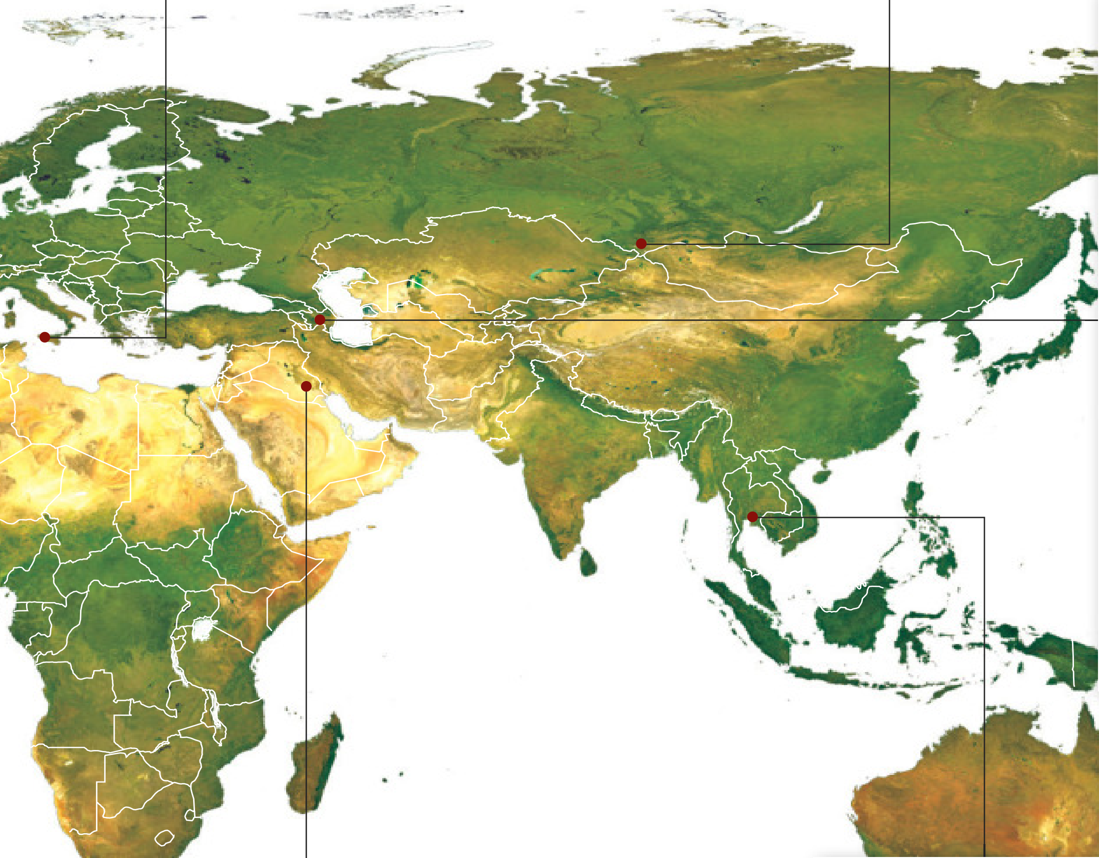
PERU: A one-of-a-kind clay figurine depicting conjoined frogs found at the site of Vichama may represent evidence of a looming crisis faced by the Caral civilization 3,800 years ago. In Andean culture, these amphibians were associated with water, rainfall, and rejuvenation. It's likely that when the 5-inch-long statuette was created, local communities were suffering from an unstable climate. The small object may have been used in ceremonies to invoke frogs' role as conjurers of rain and balance.

SENEGAL: Since prehistoric archaeological evidence rarely survives in West Africa, little is known about the hunter-gatherers who lived there thousands of years ago. Recent excavations at the Falémé Valley's Ravin Blanc X site uncovered a 9,000-year-old quartz-knapping workshop that has provided unprecedented insight into toolmaking techniques used there. Flakes from the manufacturing process reveal that artisans crafted standardized microlithic points. These points were likely hafted onto wood or bone to make hunting weapons.

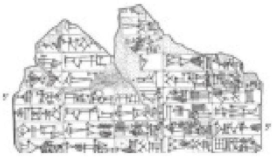
ITALY: When the Phoenicians explored the Mediterranean Sea in the 1st millennium B.C., founding new settlements in far-off lands, they brought the familiar scents of home with them. A study of 51 ceramic bottles found in the Phoenician city of Motya on San Pantaleo Island revealed that all were made in the Phoenician homeland, in present-day Lebanon, between the 8th and 6th centuries B.C. Residue analysis identified the essential components of fragrant oils, suggesting that Phoenician sailors used the bottles to carry perfumes on their trips abroad.



RUSSIA: High-resolution imaging has exposed previously invisible tattoos on the frozen remains of a woman buried in Siberia's Altai Mountains. The 50-year-old woman was a member of the nomadic Pazyryk culture, which inhabited the Eurasian steppe around 2,500 years ago. Scans revealed that her arms were covered in elaborate fighting scenes that included leopards, tigers, and stags. The complex designs were executed with such skill that today's tattoo artists would surely admire their predecessors' talents.



AZERBAIJAN: Nearly 2,000 years ago, a giant warrior wandered the plains south of the Caucasus Mountains. He was interred in an aptly large kurgan, measuring 90 feet in diameter. When archaeologists removed the stone blocks covering the burial chamber—each weighing a ton—they encountered the remains of the Bronze Age Goliath, who stood 6 feet 6 inches tall, astounding for the time. He was found clutching a bronze spear, likely signifying his role as an elite military leader.

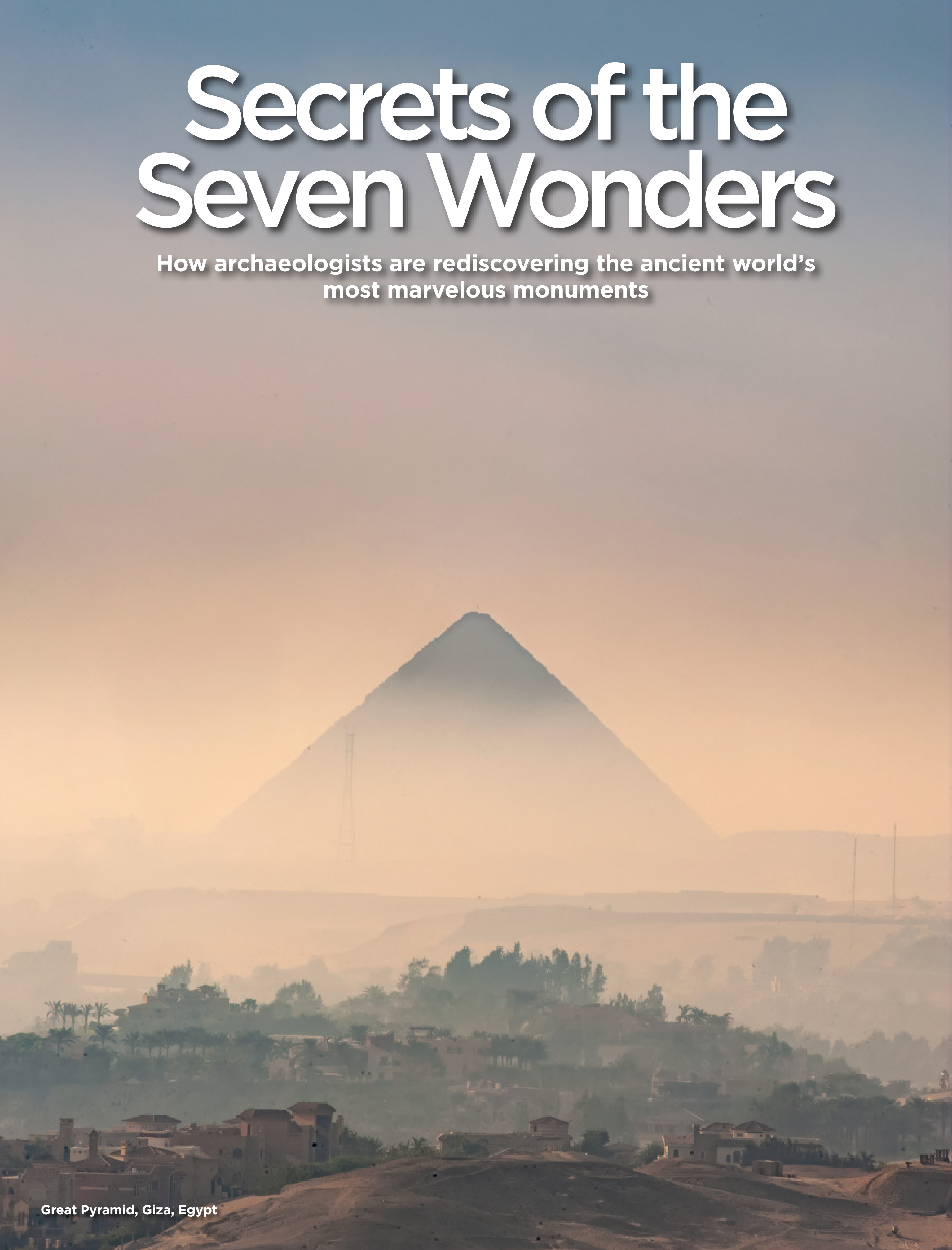


IRAQ: A lost Sumerian myth was brought back to life thanks to the recent decipherment of a forgotten cuneiform tablet. The 4,400-year-old text, which was discovered in the city of Nippur in the 19th century, tells a tale about the time the Sumerian rain god Ishkur was captured in the underworld, causing chaos on Earth. When no gods volunteered for a rescue mission, a lone fox set out to free the imprisoned deity. Unfortunately, since the tablet is broken, the outcome of the cunning animal's mission remains in question.

THAILAND: Chewing betel nuts is an addictive habit for millions of people and is a custom that dates back thousands of years in Thailand. Betel nuts, the fruit of the areca palm, have psychoactive properties that can increase levels of alertness, energy, and relaxation. Analysis of teeth from 6 people buried in a Bronze Age cemetery at the site of Nong Ratchawat detected traces of organic compounds found in betel nuts. This suggests that locals chomped on the narcotic fruits 4,000 years ago, the earliest known evidence of the practice in Southeast Asia.

Secrets of the Seven Wonders

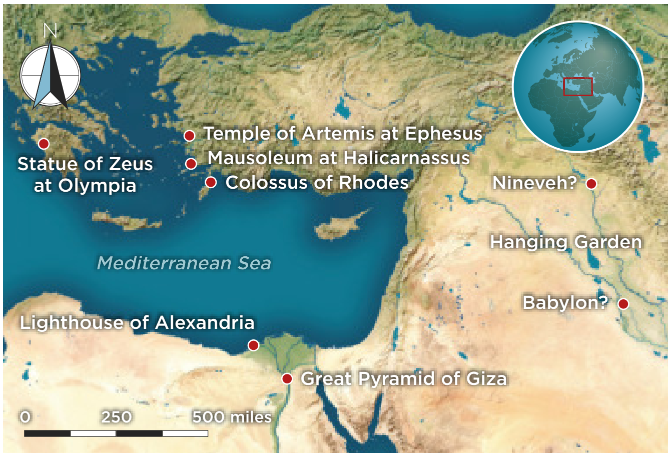
How archaeologists are rediscovering the ancient world's most marvelous monuments



Great Pyramid, Giza, Egypt

The earliest known list of seven remarkable "sights," or *theamata* in Greek, to visit in the ancient Mediterranean and Near East is preserved on a papyrus fragment dating to the second century B.C. By this time, the oldest of these sights—Egypt's Great Pyramid—had stood for nearly 2,500 years. Starting as early as the fifth century B.C., ancient writers lauded these structures, which eventually came to be referred to as *thaumata*, or "wonders." The original list persisted into the fourth or fifth century A.D., when a guidebook to the monuments called *On the Seven Wonders of the World* is thought to have been written. Nevertheless, Greek, Roman, and Byzantine historians and poets assembled their own collections of architectural and artistic marvels, which drew from the original set but also proposed new wonders, including the Roman Colosseum. In the sixth century A.D., the Lighthouse of Alexandria was added to the list, replacing the city walls of Babylon as the consensus choice for the seventh wonder.

The canonical Seven Wonders of the Ancient World were renowned for their size or splendor and—in all cases—the ingenious technical skill required to construct them. Two of the monuments, the Mausoleum at Halicarnassus and the Colossus of Rhodes, were so impressive that their names entered the lexicon as terms still used today. Although earthquakes, fire, and conquest have felled all but the Great Pyramid, the allure of the Seven Wonders endures. By poring over textual and iconographic sources, as well as the sometimes scant remnants of these extraordinary structures, scholars are investigating when, how, why—and in one case where—ancient people created them. Archaeologists are also digitally restoring some of the lost monuments to their original grandeur. It's now possible to see what an ancient visitor to these wondrous sights may have gazed upon.



GREAT PYRAMID OF GIZA, Egypt, third millennium B.C.

The Great Pyramid of Giza is both the oldest of the Seven Wonders and the only one still standing. Built by the pharaoh Khufu (reigned ca. 2551–2528 B.C.) to serve as his tomb, the monument originally stood 481 feet tall, measured 755 feet per side, and was constructed from 91 million cubic feet of stone. Although the pyramid has been studied for centuries, a surge of new discoveries over the past two decades has highlighted the massive workforce involved in its design and construction. "The Great Pyramid is astounding, but it's a very human monument," says Egyptologist Mark Lehner of Ancient Egypt Research Associates. "The mark of the human hand is everywhere."

In 2013, at the ancient port of Wadi el-Jarf on the Red Sea, archaeologists uncovered parts of a papyrus logbook kept by a man named Merer who captained a crew that transported some of the pyramid's massive blocks. Merer's logbook details the workers' daily activities and offers new insight into the logistics of the pyramid's construction. On the Giza Plateau, archaeologists have discovered a city where the workers lived. Contrary to popular belief, these laborers were not enslaved, but were well-paid employees afforded good living conditions and an abundance of food.

Scholars also now have a better understanding of the Giza landscape 4,500 years ago. Today, the Nile flows around five miles east of the Great Pyramid, but in Khufu's time, its course cut much closer to the plateau. Excavations, sediment coring, and modern mapping techniques have revealed that the Egyptians engineered an intricate series of canals, harbors, and basins to ensure that stones and other supplies could be off-loaded at the foot of the construction site.

One of the most mystifying aspects of the Great Pyramid's construction is how builders were able to excavate its huge footprint from the bedrock and create an astonishingly level base. "Nobody ever built a platform like that before, and they never did it again," Lehner says. "How did they do that?" New clues about this process are emerging in the form of thousands of regularly spaced postholes left behind by ancient builders on each side of the pyramid. Researchers hope that new scanning technology may reveal evidence about how the Great Pyramid was planned.

According to Lehner, perhaps the most pressing remaining questions concern how Khufu convinced so many people to collaborate on one of the greatest building achievements in human history, when doing so must have involved numerous potential perils, and how, exactly, the Egyptians lifted the final blocks into place at the top of the monumental structure.

—Jason Urbanus

HANGING GARDEN, Mesopotamia, eighth century B.C.

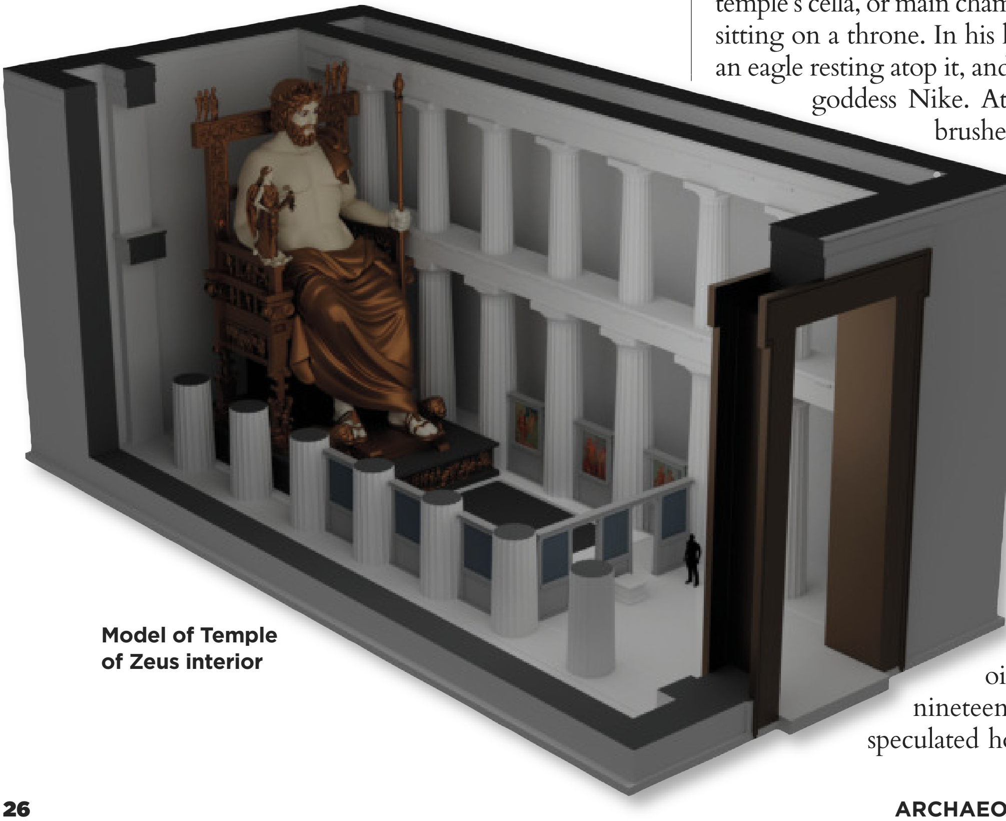
In his account of the ancient Mesopotamian city of Babylon, the first-century B.C. Greek historian Diodorus Siculus describes the Hanging Garden—not Gardens—as a lush landscape whose tree-filled terraces recalled the shape of a theater. He and other Greek and Roman authors based their descriptions of this easternmost of the wonders on earlier Greek accounts that no longer exist. Many of the writers of these reports had traveled throughout Mesopotamia as part of Alexander the Great's retinue in the fourth century B.C. and, presumably, visited the sites they chronicled. Like Diodorus, several writers identify Babylon as the Hanging Garden's location—but only the first-century A.D. Roman historian Josephus attributes its construction to the Babylonian king Nebuchadnezzar II (reigned 604–562 B.C.). Nevertheless, the king's name has persisted in the garden's lore. Scholars have found no trace of the garden in Babylon's ruins or in the copious cuneiform texts unearthed there. Furthermore, the city's location at the edge of a desert, says Assyriologist Stephanie Dalley of the University of Oxford, would have made it an improbable site for a verdant garden. "There's no way you could have watered a garden there from the Euphrates River," she says, "because there are no tributaries from which you could lead enough water down."

Ashurbanipal relief

STATUE OF ZEUS AT OLYMPIA, Greece, fifth century B.C.

People from throughout the ancient Greek world regularly flocked to the sanctuary of Zeus at Olympia for festivals, including the eponymous Olympic Games held there every four years. The Temple of Zeus, which was built beginning around 472 B.C., was the largest sacred edifice in western Greece. Around 430 B.C., the great Athenian sculptor Phidias was commissioned to craft a monumental wooden statue of Zeus covered in ivory and gold, the size of which would exceed that of the sculpture of Athena he had designed for the Parthenon in Athens. Placed on a gilded base at the back of the temple's cella, or main chamber, the sculpture depicted the god sitting on a throne. In his left hand, Zeus held a scepter with an eagle resting atop it, and in his right, a statue of the victory goddess Nike. At 42 feet tall, the sculpture nearly brushed up against the cella's ceiling—giving the impression, writes the first-century B.C. Greek geographer Strabo, "that if Zeus arose and stood upright, he would unroof the temple." Phidias' statue remained an object of awe for 900 years, even after it was relocated in the early fifth century A.D. to a palace in Constantinople. The divine image was on display there until a fire destroyed it in A.D. 475.

To accommodate the sculpture, Phidias raised the height of the cella. He also installed a large rectangular pool filled with olive oil in front of the statue. Since the nineteenth century, archaeologists have speculated how such a cavernous space would

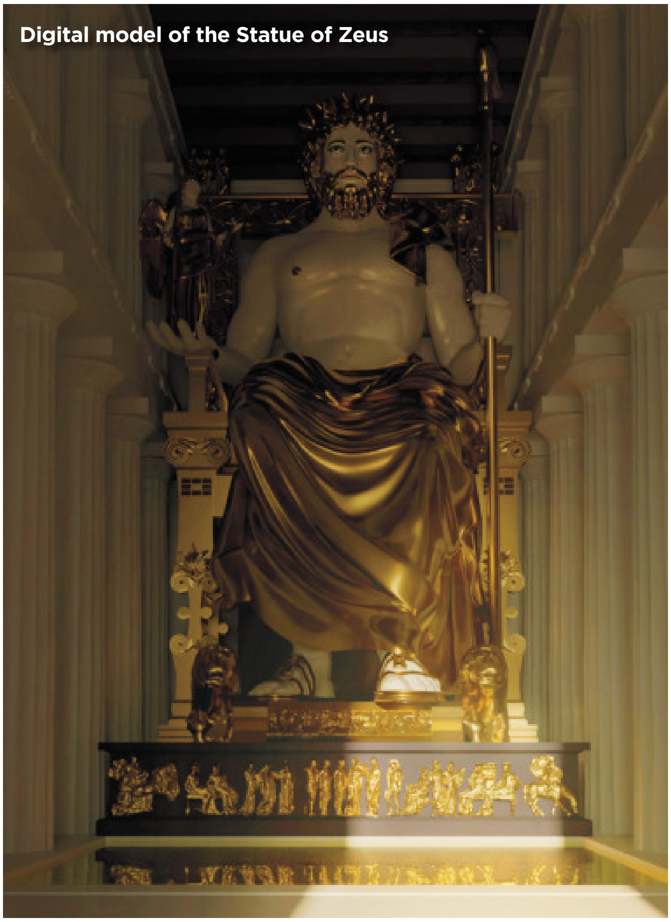

Model of Temple of Zeus interior

Dalley proposes that the Hanging Garden actually existed a century earlier than Nebuchadnezzar's reign and believes it was located in the city of Nineveh, some 300 miles north of Babylon. Situated along the Tigris River in present-day northern Iraq, Nineveh was in a mountainous area that had a considerably wetter climate than Babylon. Around 700 B.C., the Neo-Assyrian king Sennacherib (reigned 704–681 B.C.) made Nineveh the capital of his empire and built a sprawling palace there. Nineteenth-century archaeologists uncovered two broken stone reliefs, each depicting a tiered, forested garden in Nineveh. One relief was found in the palace of Sennacherib and the other in the palace of his grandson Ashurbanipal (reigned 668–627 B.C.). The Sennacherib panel doesn't survive, but excavators' original drawings of it bear striking similarities to ancient descriptions of the Hanging Garden. "This relief very clearly corresponds in several respects to details given in the Greek sources we have," Dalley says. "The depiction of a pillared walkway and how the roofing on which the trees stand is layered is an astonishing coincidence with what Greek writers say."

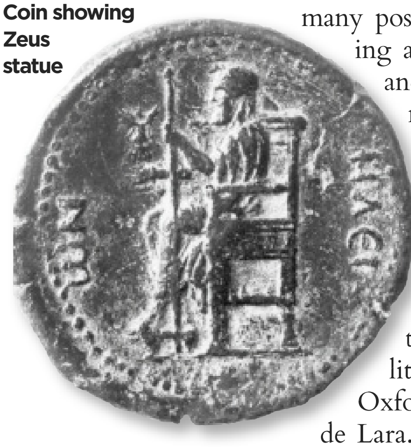
Streams and irrigation canals shown on both reliefs are also mentioned in a text commissioned by Sennacherib that records his grand efforts to transform Nineveh. This text is inscribed in cuneiform on two clay prisms. The king describes his palace garden—a park with fruit trees and aromatic plants that was built to resemble a mountainous landscape—as a monument that was "to be a wonder for all peoples." He also mentions bronze devices used to raise water to the terraces, an engineering feat matching several later descriptions of the Hanging Garden. Archaeologists have uncovered an aqueduct and system of canals dating to Sennacherib's reign in Nineveh's environs. This is further evidence supporting Dalley's argument that Nineveh may have been the elusive garden's true location after all.

—Benjamin Leonard

Cuneiform-inscribed prism



Digital model of the Statue of Zeus

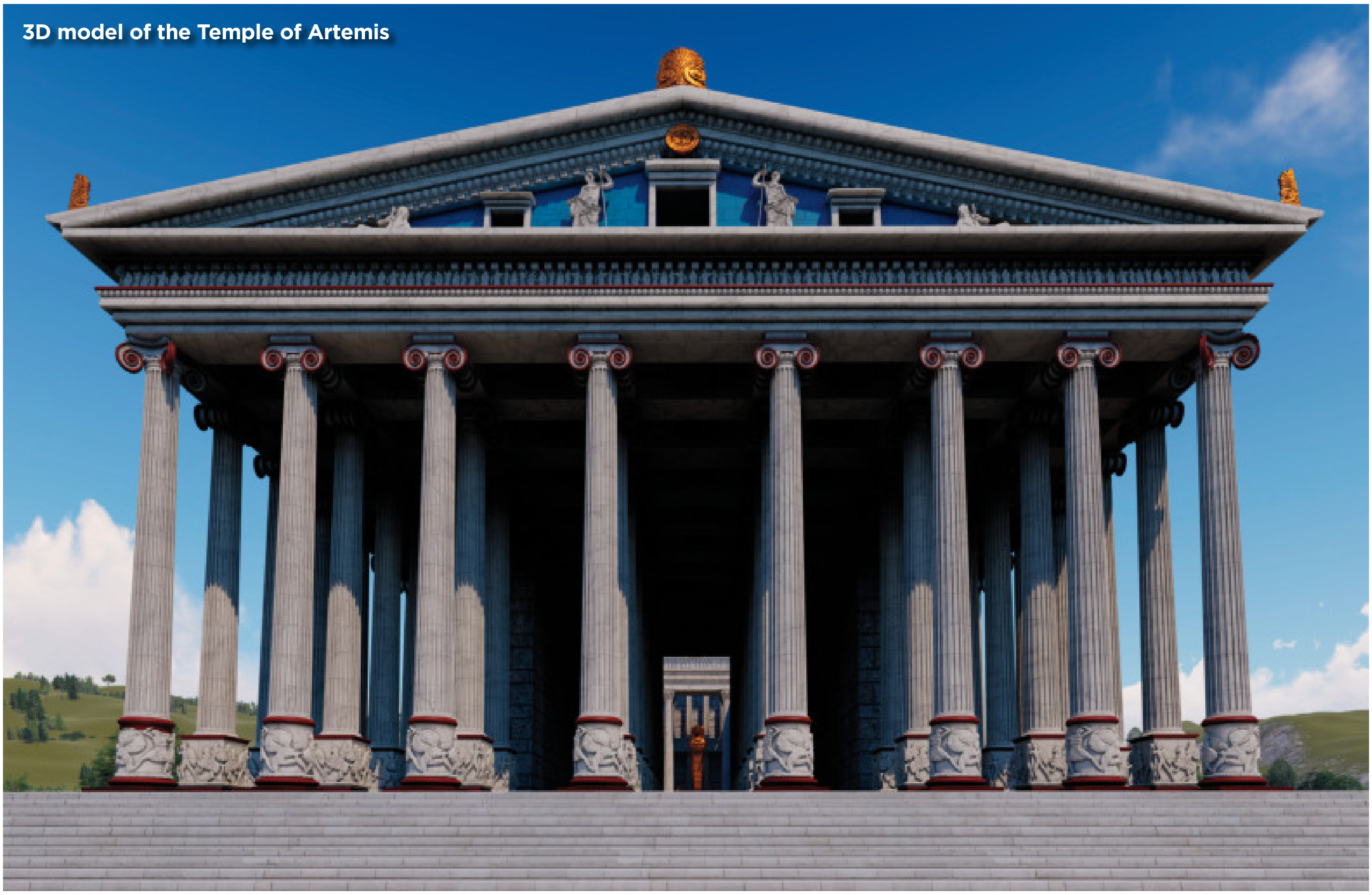


Coin showing Zeus statue

have been illuminated and how much of Phidias' masterpiece visitors would have been able to see. Scholars have proposed many possible solutions, including an open roof, skylights and windows, translucent marble roof tiles, and small openings in the roof tiles. However, these have little to no archaeological basis. "I don't think Greek temples were meant to be extremely well lit," says University of Oxford archaeologist Juan de Lara. "It's possible that the idea of the god emerging from darkness was part of the ritual of Greek religiosity."

De Lara has produced 3D models of the statue and cella to simulate the effects that possible lighting sources and building materials would have created, accounting for evidence that others have overlooked. For example, archaeologists have uncovered traces of parapet walls surrounding the statue base and pool that might have been as high as seven feet. These walls would have obscured worshippers' view of at least the base and Zeus' feet. They also could have blocked light reflecting off the pool's surface and onto the sculpture. Even so, De Lara says, natural light from the main entrance, as well as the glow from lamps or torches, could have amply illuminated the god. "Ivory and gold are very reflective," he says, "so even a little bit of light coming in through the door would be more than enough to really highlight the statue."

—Benjamin Leonard



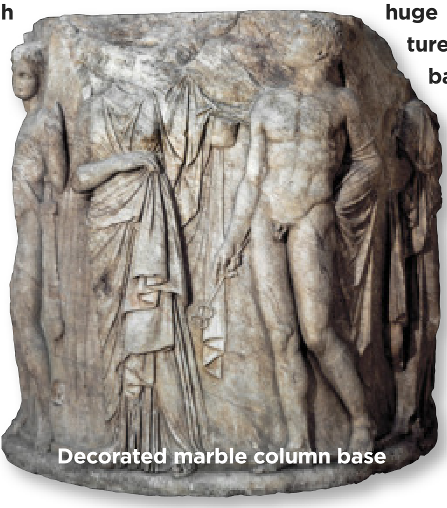
3D model of the Temple of Artemis

TEMPLE OF ARTEMIS AT EPHESUS, Turkey, fourth century B.C.

In 1863, as part of an all-out race by European museum directors to acquire the most spectacular remnants of the classical world, the British Museum began to sponsor excavations in Ephesus. The museum's archaeologists had previously found pieces of the Mausoleum at Halicarnassus in 1856—another wonder would certainly be a very large feather in their cap. Several ancient sources mention the Temple of Artemis, including the first-century A.D. Roman historian Pliny the Elder, who names the edifice's fourth-century B.C. architect and marvels at the engineering feats required to raise an all-marble building 450 feet long and nearly 225 feet wide. Pliny also remarks on the temple's 60-foot-high columns, 36 of which had bases covered with carved reliefs. Just two centuries later, the building he describes was gone. In 1869, it had been nearly two millennia since anyone had seen the Temple of Artemis. That year, the British Museum team, led by engineer turned amateur archaeologist John Turtle Wood, discovered several of the temple's sculptures and architectural elements, including one of its famed decorated column bases.

Since then, only the sanctuary wall, the foundation of the temple, and its enormous altar have been unearthed. Without anything else in situ it has been difficult for archaeologists to fathom what the structure looked like. Using Greek and Roman writers' descriptions, ancient coins, and studies of similar temples, a team led by engineer Ahmet Denker of Istanbul Bilgi University has created a 3D model of the temple as it may have looked in the fourth century B.C. What they have reimagined is a structure remarkable not only for its size but also for its odd number of columns. In addition to the 21 columns along each side of the temple, there were eight columns across the front and nine across the back. The larger spaces between the columns on the facade allowed visitors to be awed by the huge statue of Artemis inside. Other unique features of the temple include the carved column bases; three unusual openings in the temple's pediment that may have been intended to let in moonlight, Artemis being the moon goddess; and the painted spirals of the capitals that inspired all buildings of the Ionic order that followed. "Digital technology allows us to try out different ideas in 3D and to imagine the temple and its surroundings in a way that's not possible in 2D drawings or from other sources," Denker says. "It's the only way can we envision what it would have been like to visit this astonishing monument."

—Jarrett A. Lobell

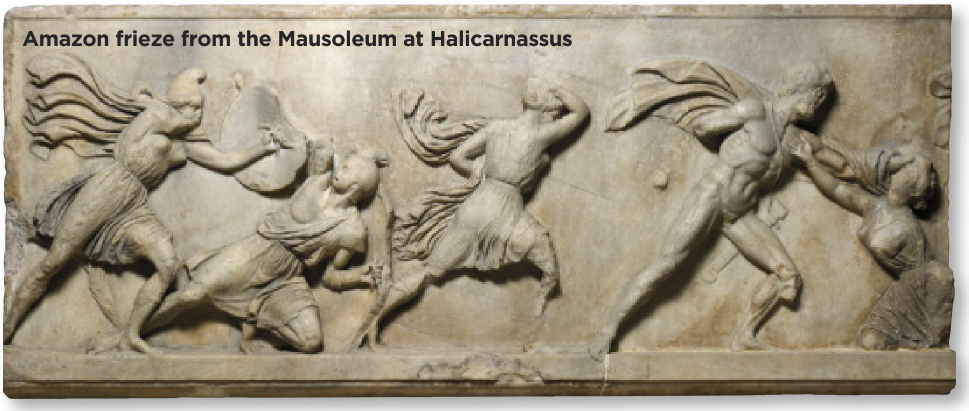


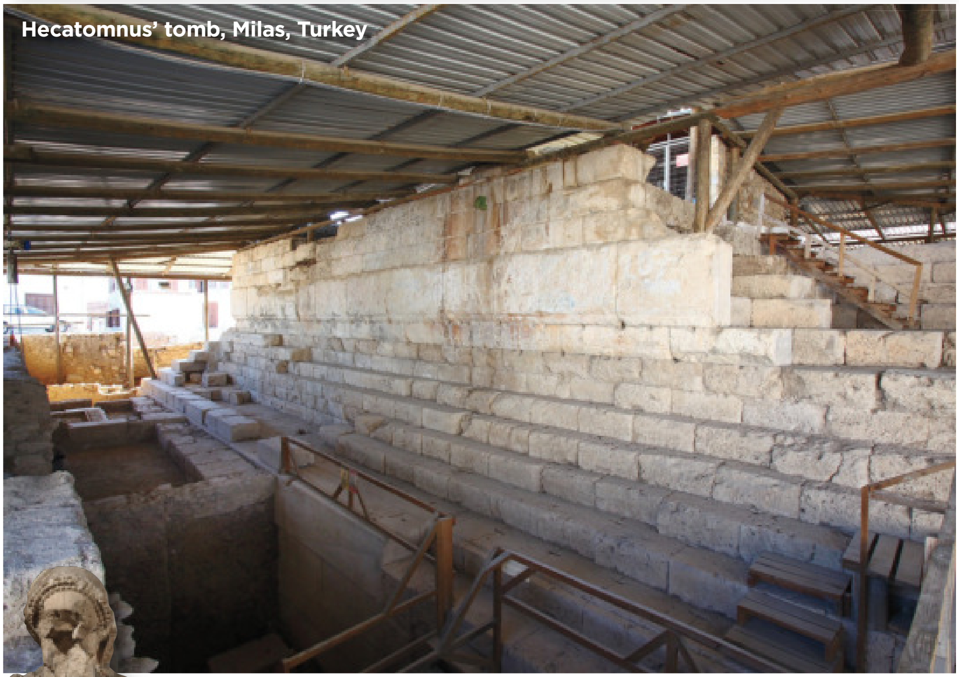
Decorated marble column base

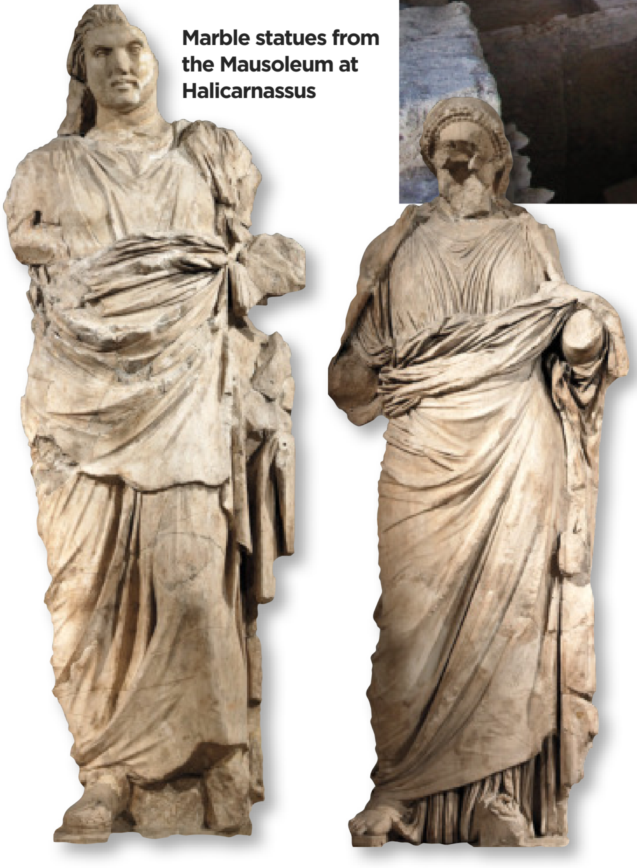
MAUSOLEUM AT HALICARNASSUS, Turkey, fourth century B.C.

The Mausoleum at Halicarnassus, the massive tomb built for Mausolus, governor of the southwestern Anatolian province of Caria from 377 to 353 B.C., lies in ruins at the center of the ancient city of Halicarnassus, modern Bodrum. Meager blocks from the monument are scattered where once stood a 14-story-tall structure clad in shining white marble and covered with decorative columns, immense sculptures, and expressive friezes designed by the most famous sculptors of the day. In their efforts to visualize this now-ruined monument, scholars have more to go on than for some of the other Seven Wonders.

In addition to the surviving sculptures and reliefs, parts of a structure exist that may have served as a model for the mausoleum. This tomb in the ancient city of Milas, some 25 miles from Bodrum, likely belonged to Mausolus' father, Hecatomnus. An inscription embedded in the southern wall of a sanctuary surrounding the tomb provides a crucial clue regarding its connection to Mausolus' family. It reads "Mausolus, son of Hecatomnus, dedicated this altar." "This constitutes valuable evidence linking the sanctuary to the lineage of Hecatomnus," says art historian Ali Yalçın, director of the Milas Archaeology Museum. Hecatomnus' tomb has three components. Its podium measures 118 feet long, 138 feet wide, and 18 feet tall at the highest preserved point. Atop this sits a burial chamber containing a sarcophagus. Archaeologists investigated and conserved an upper chamber about a decade ago, after looters attacked the monument in 2008.


Amazon frieze from the Mausoleum at Halicarnassus


Hecatomnus' tomb, Milas, Turkey


Marble statues from the Mausoleum at Halicarnassus

Hecatomnus' sarcophagus is covered with reliefs, some depicting Mausolus and his sister and wife, Artemisia. Yalçin says these closely resemble statues from the Mausoleum at Halicarnassus thought by some to represent the pair. Paintings of Amazons on Hecatomnus' burial chamber walls, he adds, are almost identical to the friezes from Mausolus' tomb. "From both an architectural and artistic perspective," Yalçin says, "the sanctuary of Hecatomnus may be regarded as the prototype of the Mausoleum at Halicarnassus."

—Jarrett A. Lobell

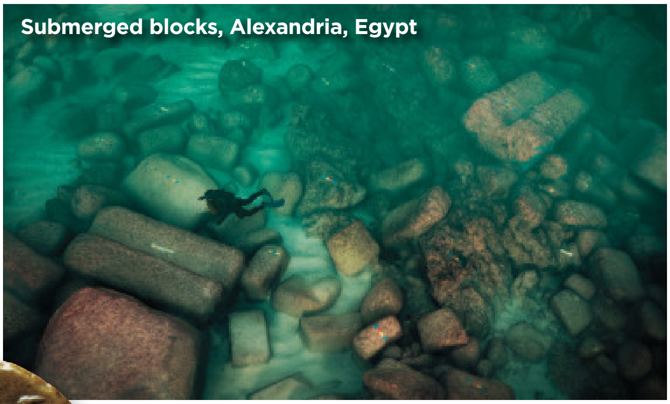
LIGHTHOUSE OF ALEXANDRIA, Egypt, third century B.C.

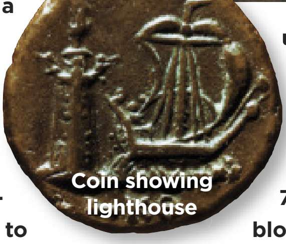
Approaching the port of Alexandria in antiquity could be perilous. The coastline faces the open Mediterranean Sea and is littered with reefs and shallows that could easily sink a ship. The port was also crowded with military and royal vessels. When Ptolemy I (reigned 304–284 B.C.) became king, he began to plan what is thought to be the world's first monumental lighthouse at the eastern tip of the nearby island of Pharos to aid arriving vessels. Completed 15 years later under Ptolemy II (reigned 285–246 B.C.), the edifice stood nearly 350 feet high. It was surmounted by a flame illuminating the waters around the harbor, ensuring sailors' safety and advertising the Ptolemaic Dynasty's power and beneficence for miles. The lighthouse remained standing for some 1,500 years until a series of earthquakes at the start of the fourteenth century weakened it. Over the next century, what remained tumbled to the seafloor.

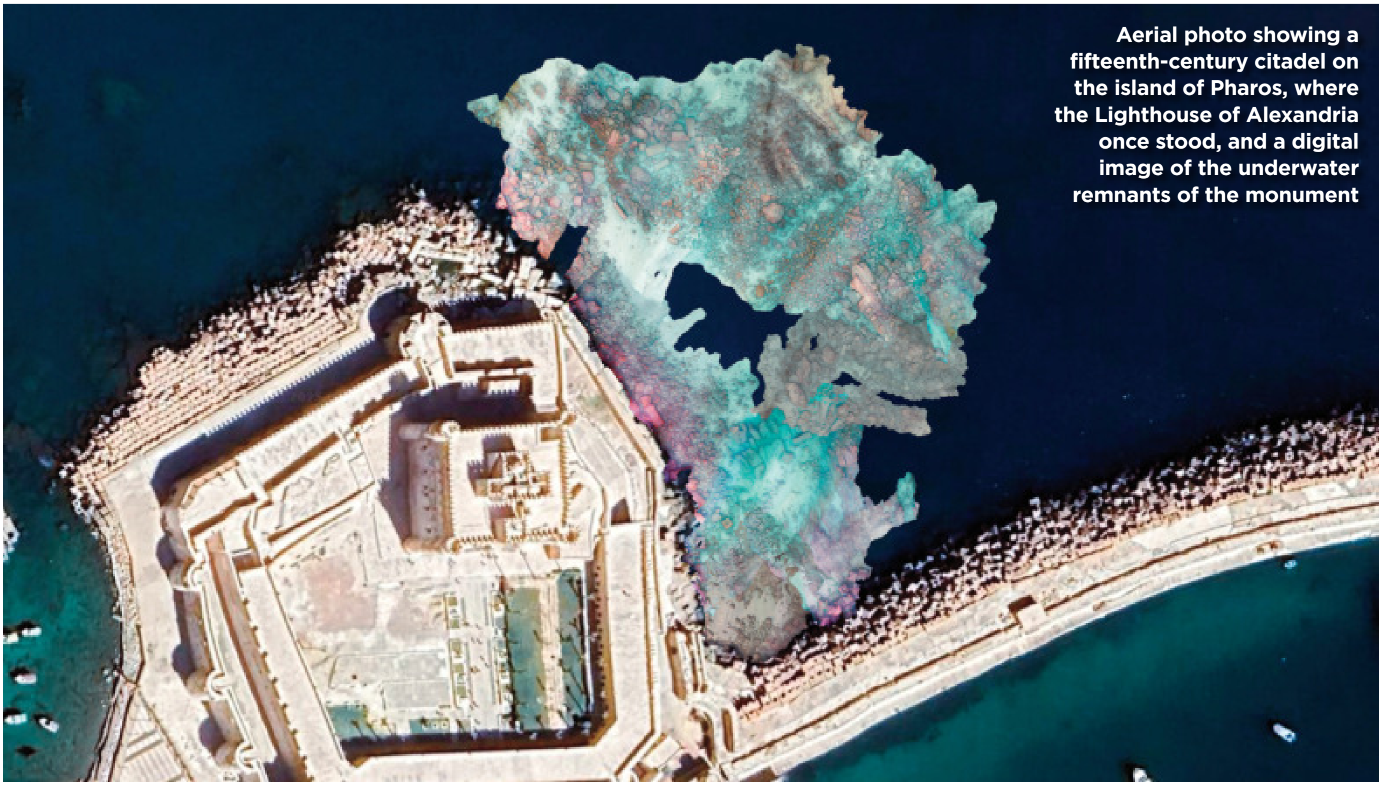
The first remnants of the lighthouse weren't located until 1960, and excavations began in 1994. Since then, archaeologists have made many discoveries, including more than 2,000 metal clamps used to hold the monument's enormous stone blocks together. "This was very surprising since usually ancient metal is repurposed," says archaeologist Isabelle Hairy of the Center for Alexandrian Studies and France's National Center for Scientific Research. "These clamps help explain how the immense structure was built in only fifteen years, because this is a much faster method than using mortar." Early on, Hairy also identified immense stone fragments of the lighthouse's main door.

For the last decade or so, photogrammetry—a method that uses thousands of 2D photographs to create a 3D model—has been an invaluable part of the team's work. They have used this method to digitize the site's expansive underwater surface. Thus far, they have processed 143,000 images and recorded 70 percent of the site, including more than 5,000 blocks—some weighing as much as 60 tons—from the lighthouse and other ancient buildings that once stood on the shore. Blocks like those belonging to the door used to take several days to draw by hand, but can now be virtually reconstructed in minutes. "Photogrammetry was also a discovery," says Hairy. "The visibility underwater is extremely bad, the seafloor is very uneven, and there's no stratigraphy at all, so with this incredibly detailed view, we can really begin to understand the site."

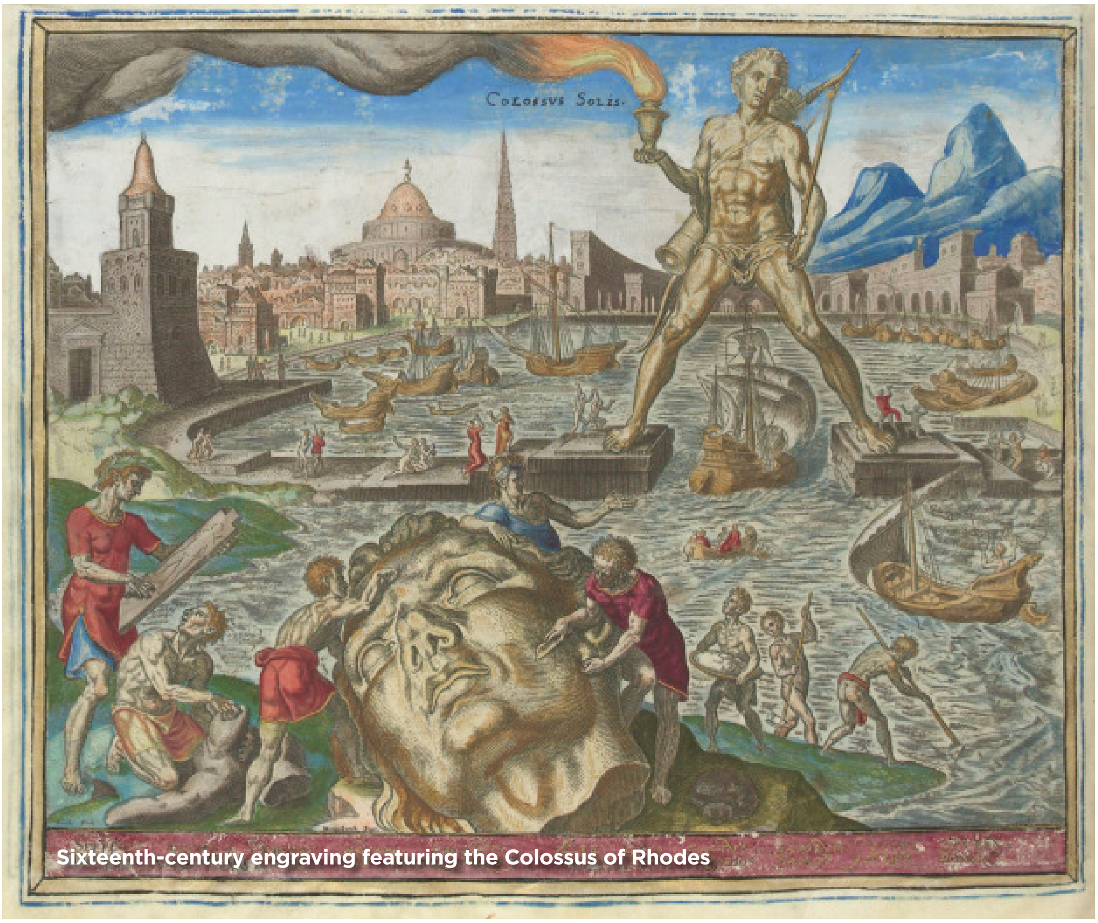
—Jarrett A. Lobell


Submerged blocks, Alexandria, Egypt


Coin showing lighthouse


Aerial photo showing a fifteenth-century citadel on the island of Pharos, where the Lighthouse of Alexandria once stood, and a digital image of the underwater remnants of the monument

COLOSSUS OF RHODES, Greece, third century B.C.


Colossvs Solis.

Sixteenth-century engraving featuring the Colossus of Rhodes

The Greek city of Rhodes emerged victorious from a yearlong siege by the Macedonian noble Demetrius Poliorcetes in 304 B.C. To commemorate their city's resilience, the Rhodians built a towering bronze statue of the sun god Helios, their patron deity, who also appeared on their coinage. It took the local sculptor Chares 12 years to construct the Colossus of Rhodes, the tallest sculpture in the ancient world at some 120 feet. Chares created the statue using a revolutionary process known as casting in courses, which no other ancient sculptor is known to have employed. In order to cast each course, or level, of the Colossus in place, a huge earthen mound was built, enabling artisans to reach ever higher. They used metal bars to affix the bronze cladding to a stone core.

Just decades after its completion, an earthquake in 227 B.C. toppled the mighty sculpture, which broke off at the knees. Its ruins were apparently still lying on the ground into the first century A.D. By the late fourteenth century, none of the Colossus remained, but pilgrims discovered vestiges of ancient fortifications flanking the city's harbor and mistakenly identified them as parts of the statue. This led to spurious depictions of the Colossus straddling the harbor.

Coin showing Helios

With no surviving remnants or ancient representations of the Colossus, such myths have influenced debate about its appearance, location, and purpose. Archaeologist Nathan Badoud, director of the Archaeological Service of the State of Geneva, traced the sculpture's origins through epigraphic and iconographic sources to a type of statue called a *kolossos* in Greek, which was made as early as the seventh century B.C. "The meaning of 'colossus' as an oversized statue only appeared after the destruction of the Colossus of Rhodes," he says. "Originally, a kolossos was a magical statue, not defined by its size, that could encase a god or mortal."

The dedicatory epigram on the statue's base, preserved in an anthology of Greek poems, records that the Colossus "crowned" the city, leading Badoud to surmise that it had been located on a hill. He believes the most probable site is a sanctuary dedicated to Helios that is thought to have sat atop a small hill in the city center. Although a fourteenth-century fortress now covers this spot, an inscription mentioning a sacred area of Helios, dedications made by his priests, and a marble head of the god have been found there.

Following the departure of Demetrius' troops, the Rhodians seized vast territories in Asia Minor and neighboring islands in the southeastern Aegean Sea. The Colossus would have been a fitting symbol of their victory over the Macedonians and of their conquests. "Rhodes became a true empire, and the purpose of the Colossus was to protect this empire with all its magic powers," Badoud says. "The statue fixed Helios at the center of the new territories to ensure that they would never escape Rhodian domination."

—Benjamin Leonard

ACTS OF FAITH

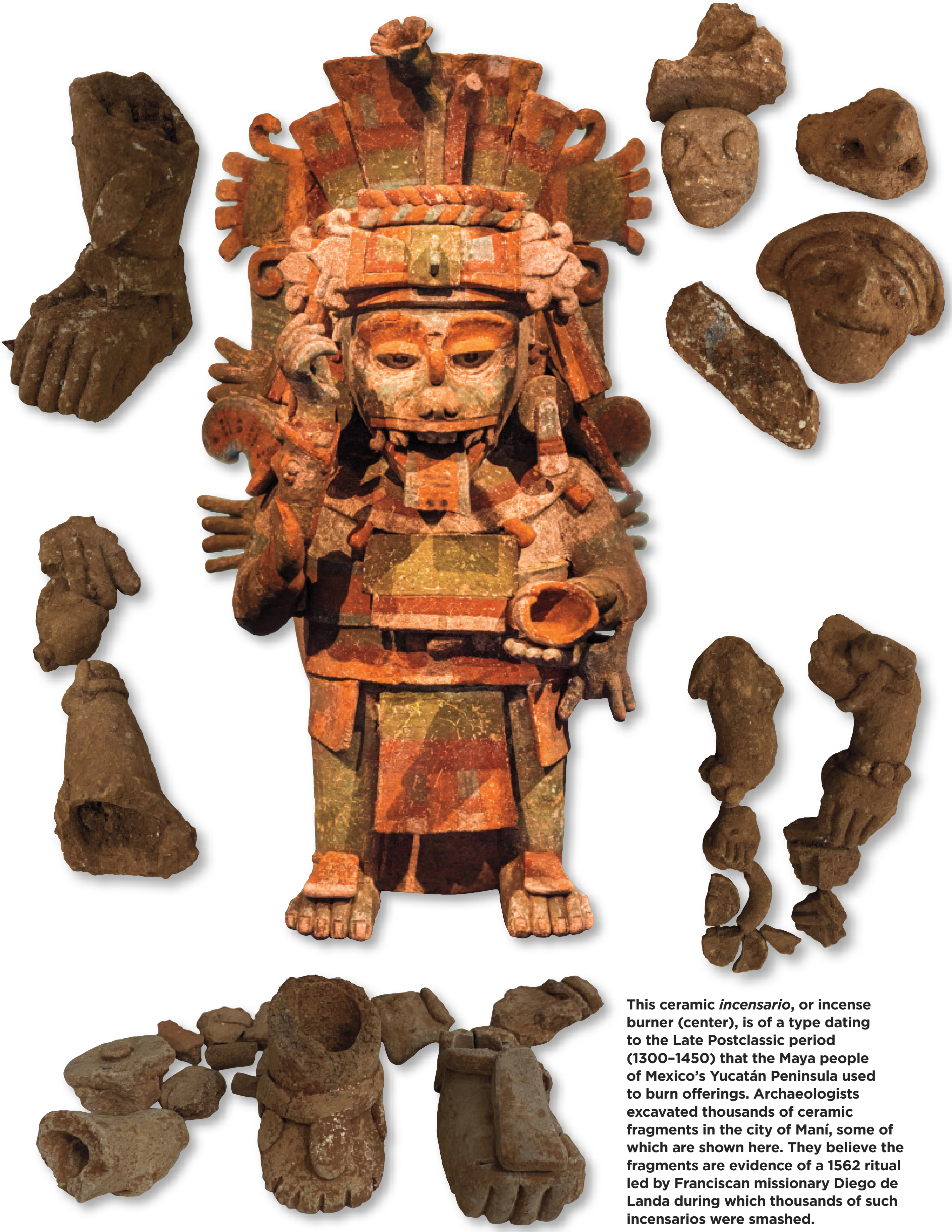
Evidence emerges of the day in 1562 when an infamous Spanish cleric tried to destroy Maya religion

By Daniel Weiss

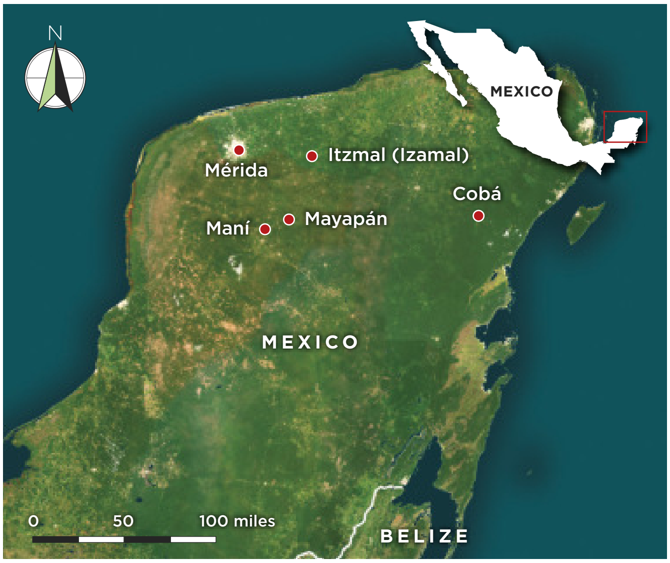
In May 1562, Diego de Landa, the highest-ranking Catholic authority in Mexico's Yucatán Peninsula, received word that a large number of idols, along with human bones and deer meat, had been discovered in a cave near the town of Maní. Landa had spent the previous 13 years as a Franciscan missionary fervently converting the region's Indigenous Maya people to Christianity and attempting to stamp out pagan worship. Yet here was clear evidence that idolatrous practices persisted—possibly including human sacrifice. Landa commissioned the friars in Maní to investigate this outbreak of heretical behavior among Maya who had already been baptized. People living near the cave confessed that they had appealed to the idols in an attempt to increase rainfall and to obtain assistance in hunting deer. Landa's fellow Franciscans and a network of Maya informants fanned out across the peninsula, confiscating a massive collection of idols. By July, according to Spanish legal records, they had investigated 6,300 Maya, subjecting many to harsh questioning under torture. They had also meted out punishments including ritual humiliation, public flogging, and forced servitude to more than 4,500 people. At least 157 individuals had died as a result, 32 had been permanently maimed, and dozens had been driven to suicide.

This reign of terror reached its height on Sunday, July 12, 1562. On that day in Maní, Landa presided over an auto-da-fé, meaning "act of faith," a ritualized display of public penance used during the Spanish Inquisition. At the head of a long procession walked Landa and the province's governor, Don Diego Quijada, guarded by armed Spaniards. After them came friars who served as ecclesiastical judges in the trials of Maya accused of heresy. Next marched Maya assistants to the friars carrying 64 scarecrow-like effigies representing deceased Maya leaders deemed guilty of idolatry and 114 sets of bones belonging to these leaders that had been dug up for the occasion. After the procession, these deceased leaders would be sentenced to a sort of spiritual death, and their effigies and bones would be set on fire.

Next came 69 living Maya leaders, wearing sanbenitos. These yellow garments, which were decorated with the St. Andrew's cross, the wearer's name, and a description of their alleged crimes, were markers of shame associated with the Inquisition. Nine of these leaders, considered the most culpable, also wore pointed caps called *corozas*. When the procession finished, all 69 Maya leaders would be sentenced to severe punishment, which could include having their hair shorn, wearing the sanbenito for several years, receiving hundreds of lashes, and performing years of forced labor in the cathedral of the provincial capital, Mérida. Once their penance was completed, the offenders would be allowed to rejoin the Church. At the rear of the procession were at least 95 prominent Maya whose offenses were considered comparatively minor. They were naked from the waist up, had ropes around their necks, and carried green candles of repentance. After being lashed, their penance, too, would be complete.



This ceramic *incensario*, or incense burner (center), is of a type dating to the Late Postclassic period (1300–1450) that the Maya people of Mexico's Yucatán Peninsula used to burn offerings. Archaeologists excavated thousands of ceramic fragments in the city of Maní, some of which are shown here. They believe the fragments are evidence of a 1562 ritual led by Franciscan missionary Diego de Landa during which thousands of such incensarios were smashed.



Many of the Maya charged during the auto-da-fé were required to carry idols that they had been caught hiding or worshipping. After being sentenced, these penitents were led to a bonfire where they were forced to destroy the objects as a demonstration of their Christian faith. "These were often heirloom pieces that had been used by Maya families as religious objects passed down from their ancestors and protected for generations," says historian John Chuchiak of Missouri State University. "They had to physically smash them on the ground, step on them, spit on them, and throw them in the fire." According to Spanish government records, many thousands of idols and other cultural artifacts were demolished during the auto-da-fé in Maní. Also burned were 27 codices, folded books featuring hieroglyphs written on bark paper that recorded details of Maya ritual practice. More than 100 such codices were destroyed during the Spanish colonial period (1542–1821), leaving—at most—four known to exist today. "The auto-da-fé of Maní represents a destruction of cultural patrimony at a massive scale," says Chuchiak.

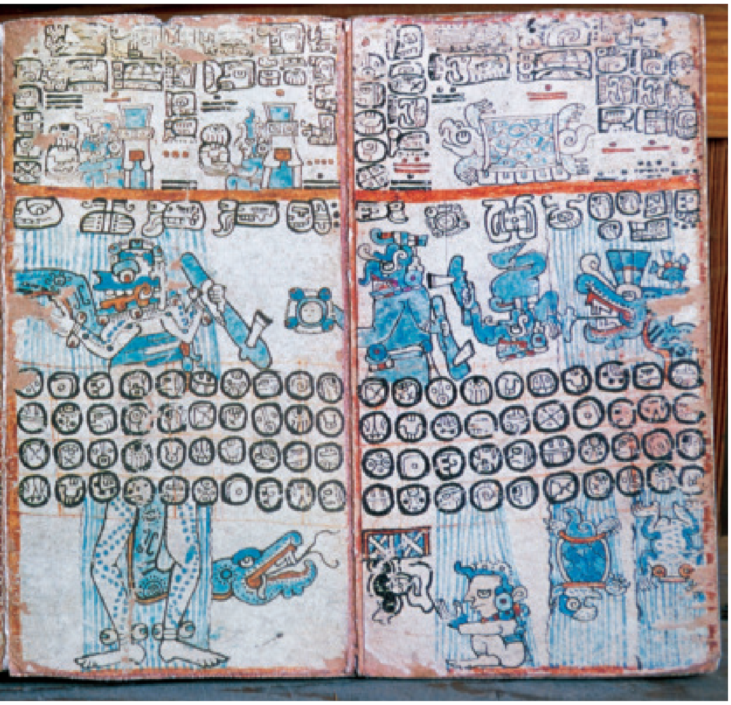
EVIDENCE OF THIS auto-da-fé lay hidden for more than 450 years after Landa orchestrated the savage event in Maní. Archaeological work in the small city was largely focused on its cenote, a sinkhole that provided water to the ancient population, in which Yucatán's earliest ceramics, dating to around 1000 B.C., have been unearthed. Then, in January 2015, as part of a campaign to have Maní declared a Pueblo Mágico, or Magical Town, a designation intended to encourage tourism in out-of-the-way Mexican locales, workers began to dig drainage holes in a plaza in front of the *palacio municipal*, or city hall. They soon came upon a large concentration of ceramic fragments and contacted authorities at Mexico's National Institute of Anthropology and History. Archaeologist Tomás Gallareta Negrón was called in to carry out a limited rescue excavation in cooperation with Fomento Cultural Banamex and the Yucatán government.

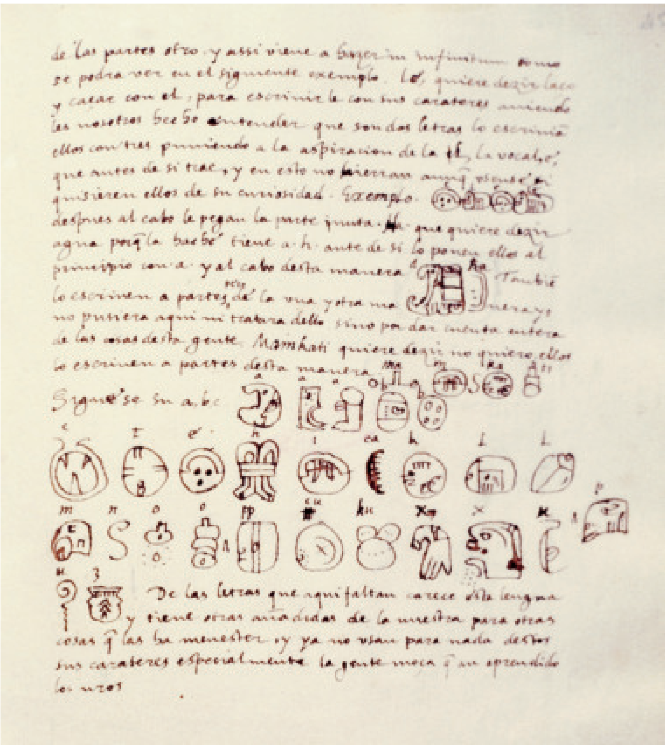
In all, several thousand sherds were uncovered in front of Maní's city hall. Some of the fragments were found intermingled with pieces of charcoal and show traces of burning. Archaeologists have determined that almost all are parts of a specific type of *incensario*, or incense burner, dating to the Late Postclassic period (1300–1450). These vessels typically measure between four and 20 inches tall and were used to burn fragrant resins and gums such as copal or rubber as offerings. They generally include a representation of a deity, such as the creator god Itzamná or the rain god Chahk, and their purpose was to link the living Maya to their gods and ancestors.

Archaeologists concluded that these fragments were remnants of the thousands of idols destroyed during Landa's 1562 auto-da-fé. "It's exclusively incensario fragments of one type, and that's what has led us to make the case that what you're looking at is the moment in time when Diego de Landa stood there in Maní, smashed the idols he had collected, and then burned and buried them," says archaeologist George Bey of Millsaps College. "This is the first artifactual evidence of that moment in history." The archaeologists found that the incensarios had been pulverized into extremely small pieces and then mixed together, as if to make it impossible to ever reassemble them. "They were treating these things like they were something created by the devil, so they wanted to destroy them totally," says Gallareta Negrón. "It was as if they were saying, 'Look at what we are doing with your gods.'"

These pages are from one of the very few Maya codices known to exist today. Codices are folded books that feature hieroglyphs on bark paper and record details of Indigenous ritual practices. Some 27 such codices were burned in Maní in 1562.

According to Chuchiak, the results of even this limited excavation provide a rich complement to the documentary record. "The quantity of pieces along with the burned material is just amazing," he says. "We have eyewitness testimony of what happened, but when you combine that with the archaeological evidence, it really brings to light a historical event." One detail of the auto-da-fé missing from the historical record, however, is exactly where it took place. Some claim it was carried out in the atrium of Maní's church, but the discovery of the incensario fragments in front of the city hall contradicts this assertion. In 1562, that building was the palace of Francisco de Montejo Xiu, the most powerful Maya chief in Maní. Xiu was one of the leaders who was forced to wear a sanbenito and coroza during the auto-da-fé and received particularly severe punishment. Chuchiak says it makes sense that the auto-da-fé, in which justice was served by secular authorities on behalf of the Church, would have been carried out in a public place. "The Spaniards were displaying demonic images, and they wouldn't do that in the holy atrium of a church," he says. "Idols were stored in the atrium, but they were all transported to the plaza for destruction."



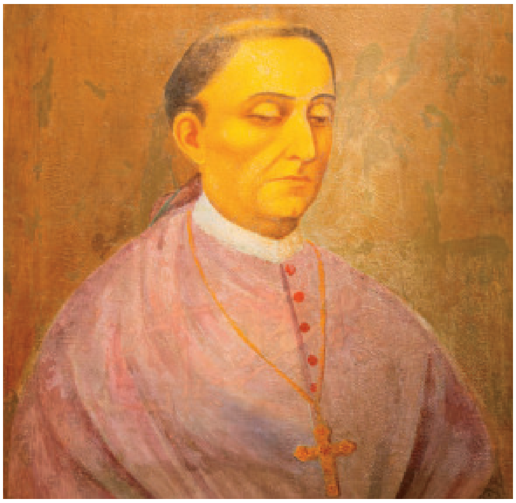


A page from a work known as *Account of the Things of Yucatán* includes Maya hieroglyphs along with their phonetic pronunciations as recorded by Landa.

LANDA WAS BORN IN 1524 into a well-connected family in the small Spanish town of Cifuentes. By the age of 10, he had become a page in the household of the town's count. This afforded him the opportunity to befriend prominent members of the Spanish court, including the future king, Philip II (reigned 1556–1598). Landa joined the Franciscan order when he was 16, entering the monastery of San Juan de los Reyes in the city of Toledo. There, he met visiting friars from the New World who shared thrilling tales of converting the natives, combating idolatry, and risking martyrdom. "These missionaries were seen as the shock troops of Christianity," says Chuchiak. "They called themselves spiritual conquistadors, going out against the forces of the demons." After continuing his studies at a religious institution called a *convento* outside Madrid, Landa was granted permission to join the missionary ranks on an expedition to Yucatán in 1549.

At this point, the Spanish controlled only a small portion of the peninsula, having established a colony six years earlier after several failed attempts. They had founded a single city, Mérida, along with several smaller towns, and completed four conventos, including one in Maní. Landa was one of just 19 friars in a territory inhabited by hundreds of thousands of Maya. There were significant tensions between the friars and Spanish settlers, or *encomenderos*, who were granted the right to draw labor and to exact tribute from groups of Maya villages. The encomenderos were supposed to assist in converting the Maya, but were typically more interested in exploiting them economically, often turning a blind eye to their traditional ways of worship.

Shortly after his arrival in Yucatán, Landa was sent east from Mérida to establish a new mission in an area untouched by Christianity. At first



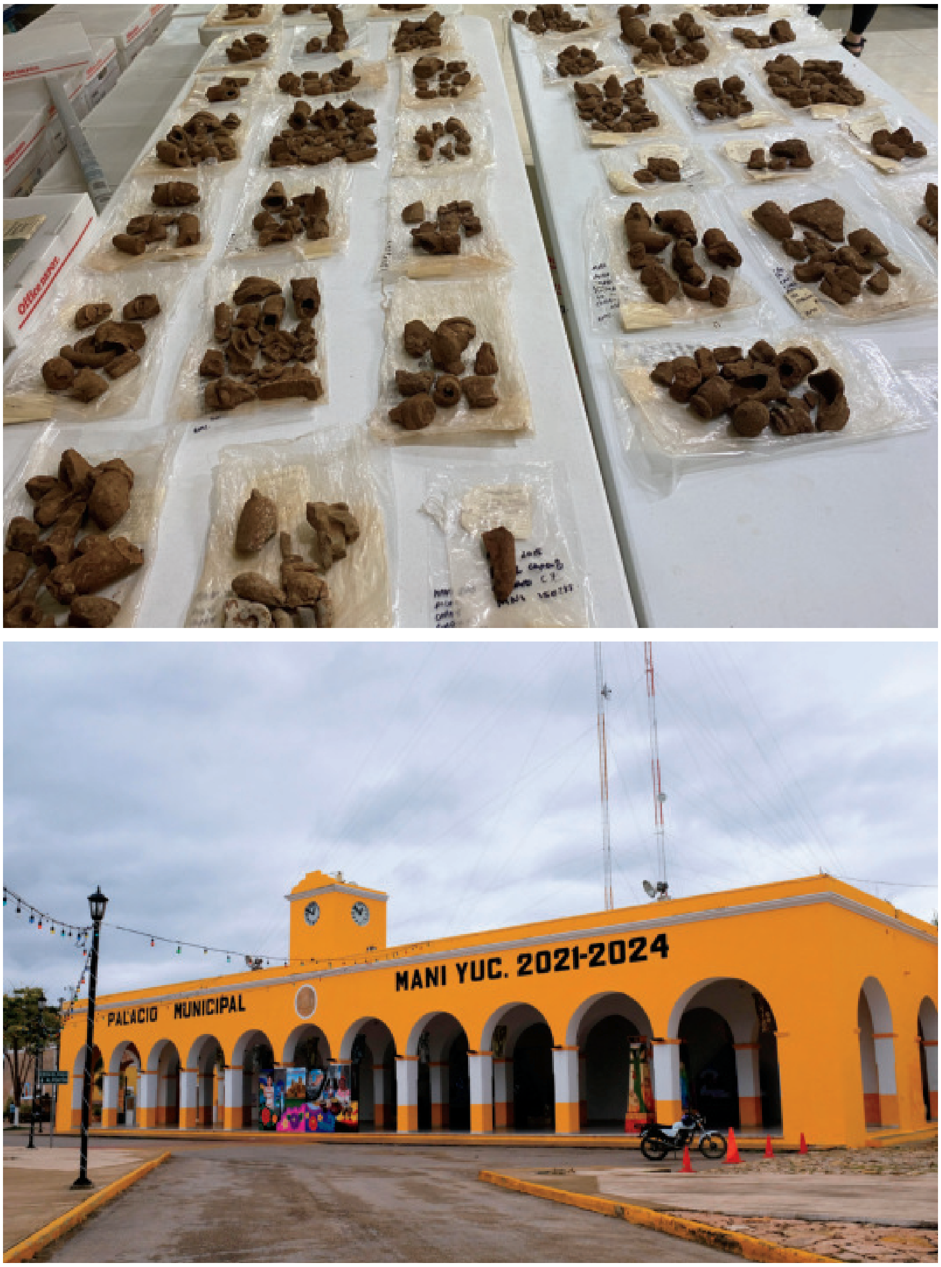
A sixteenth-century portrait of Landa

working with a more experienced friar, and then on his own, Landa established a major monastic complex in the Maya city of Itzmal, which the Spanish renamed Izamal. Landa was generally acknowledged to be the most energetic and driven of the Franciscans on the peninsula and spent a great deal of time spreading the gospel in Maya villages several days' walk from Izamal. "He goes by himself into inhospitable territory, risking his life in this very brutal climate, preaching about the evils of the old gods, and trying to convert the natives," says Chuchiak.

Although Landa would go on to destroy irreplaceable sources of knowledge about the Maya in his auto-da-fé, during his missionary work he recorded a great deal about their culture and religion, some of which was included in a volume known as *Relación de las Cosas de Yucatán*, or *Account of the Things of Yucatán*. This text features copious details about the Maya writing system as well as the Maya calendar and religious practices, including idol worship and human sacrifice. "Landa sat down with Maya speakers and asked them to write out glyphs for various alphabetic sounds. He provided a sort of Rosetta Stone for deciphering Maya glyphs," says Bey. "He also spent a lot of effort trying to convert communities and working with younger elites, teaching them Spanish and bringing them into his religion." Upon learning that people he thought had converted to Christianity were still worshipping idols and had forbidden codices in their possession, Landa felt an acute sting of betrayal.

When Landa arrived in Yucatán, it was part of the colonial province of Guatemala and thus subordinate to provincial religious authorities. In 1561, however, Yucatán became its own province, and Landa was made head of the Franciscan order there. When he learned of the idolatrous behavior near Maní in May 1562, Landa believed that he had free rein to pursue the heretics. By all accounts, the inquisition he oversaw was extremely zealous, implicating Maya from all walks of life, including many who served in Catholic churches as choirmasters or sacristans. Landa was equally dedicated to gathering codices and idols that could be destroyed during the auto-da-fé. "There are descriptions of mountains of idols piling up," says Chuchiak.

Some scholars have suggested that Landa was so fixated on assembling an impressive quantity of idols for the auto-da-fé that he ordered his friars to roam far from Maní in search of incensarios. The friars' Maya assistants are thought to have found rich sources of incensarios at abandoned Maya sites such as Mayapán, not far from Maní, and Cobá, 100 miles east of the town, near Yucatán's east coast. At the time, these sites were still considered sacred by the Maya, who visited them to make offerings. "The idea was that Landa was asking his assistants to bring to Maní as many incensarios as possible to show how big a problem idolatry was among the Maya," says Gallareta Negrón. "He wanted to be able to put on an exemplary show, to give them a lesson they would never forget."



Some of the thousands of incensario fragments (top) that were found in front of Maní's *palacio municipal*, or city hall (above), are laid out for study in the archaeologists' lab.

To test the hypothesis that the incensarios came from far and wide, the archaeologists selected 20 fragments unearthed in Maní and analyzed their chemical and mineral compositions. Leslie Cecil, an archaeologist at Stephen F. Austin State University, compared the results of this analysis with samples from various locations in the region. She found that most of the sherds do appear to have come from ceramics originating in Mayapán. In addition, two or three fragments incorporated crushed pieces of pottery from the Late Classic period (A.D. 600–900). The practice of including pieces of earlier pottery in Late Postclassic incensarios was limited to certain areas of the Maya world. Using chemical analysis, Cecil determined that these hybrid fragments likely came from northern Belize, far from Maní on the east coast of the peninsula. "There was some exchange and trade of incensarios, so they may have been in the area already," says Bey. "But the results provide some indication that Landa was scrounging around for incensarios. It raises the possibility that he was trying to plant evidence to convince the civil authorities that these people were rabid pagan idol worshippers who killed children and were reading prohibited manuscripts."

A statue depicting Landa stands in front of a grand religious complex called a *convento* that he established in the city of Izamal, known to the Maya as Itzmal.

Francisco de Toral, the first bishop of Yucatán, arrived in the province in October 1562. Inundated with complaints about Landa's brutal practices from the Maya and the encomenderos alike, Toral put an immediate end to the anti-idolatry campaign, reported Landa to King Philip II, and overturned the punishments that had been handed down at the auto-da-fé. "Landa realizes he is going to have trouble," says Chuchiak. "He escapes to Spain literally in the middle of the night before the royal order comes to bring him back." In Madrid, Landa was brought before the Council of the Indies, the administrative body that oversaw Spain's colonies in the Americas, to face charges that he had improperly usurped the power and function of an inquisitor. Despite Landa's claim that this power was rightfully his as the highest religious authority in the province, the council was inclined to decide against him. However, the king, who knew Landa from childhood, intervened and turned the case over to the Franciscan order, which declined to discipline him.

Rather than facing censure for his actions in Yucatán, Landa was seen as an expert on converting the Maya. Philip summoned him to confer on whether an official inquisition tribunal should be given authority over Native people in the Americas. Landa advised against this, instead suggesting that bishops should oversee such inquisitions, the approach that was ultimately adopted. Landa was soon able to take advantage of this policy. When Toral died in 1572, Landa was sent back to Yucatán as the new bishop. With no question of his authority, he resumed his unforgiving approach, punishing more Maya than he had before and launching additional autos-da-fé. This time, Landa had an added layer of protection. Pope Gregory XIII, who had installed him as bishop, issued a special papal bull exonerating Landa for any wrongdoing he might have committed and prescribing excommunication for anyone who alleged he had committed violations while acting as an inquisitor. "Landa destroys two Spanish governors who accuse him of having done illegal things," says Chuchiak. "He brings out the papal bull and says, 'Well, you are excommunicated.' And he got revenge on all the encomenderos who had testified against him."

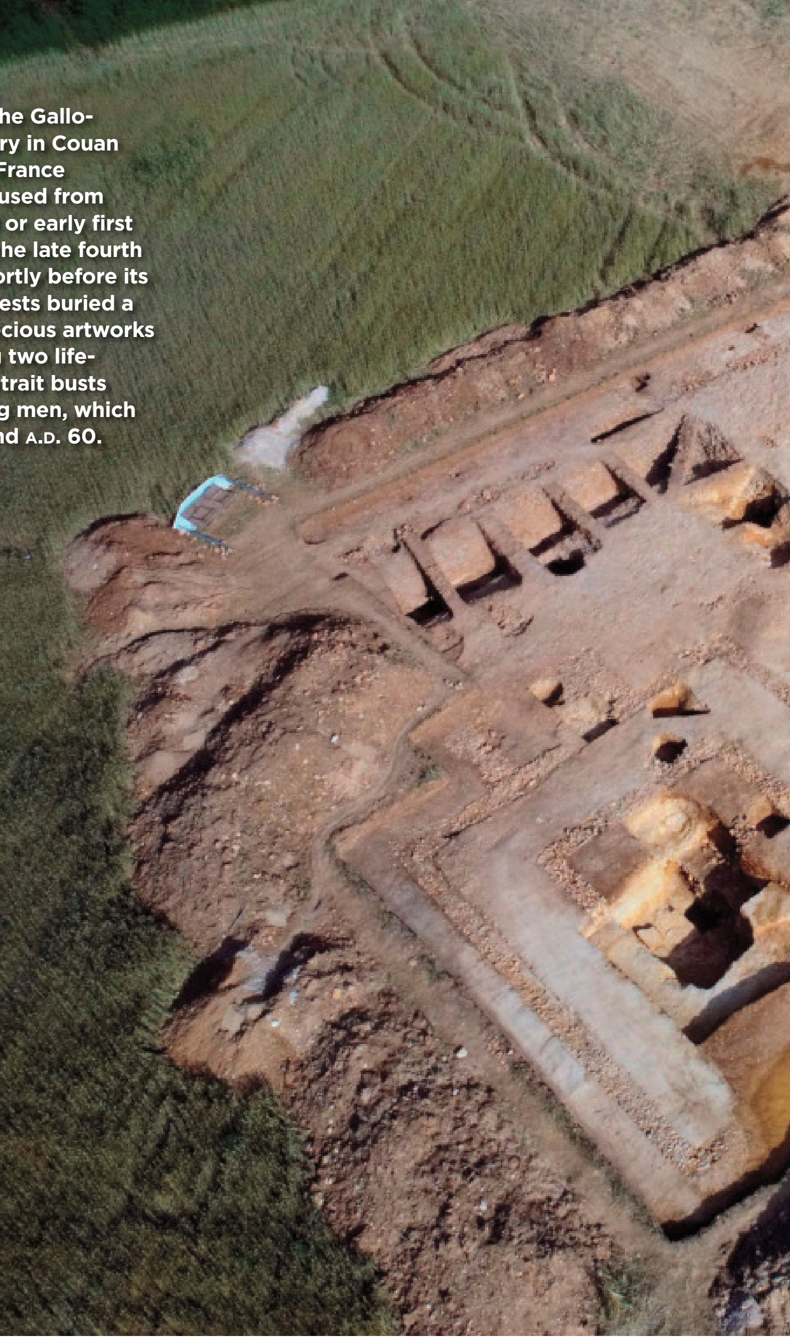
With the perspective of almost five centuries, it's clear that the auto-da-fé in Maní was a key juncture in Spanish colonial history, a moment when the fledgling colony's religious authorities violently exerted control over their subjects and forced them to accept their creed. "The auto-da-fé of Maní is really, as they say in Spanish, *parteaguas*, a watershed," says Chuchiak. "There's a before and then there's an after. It is one of the most important events in the religious and cultural history of the Maya under Spanish colonialism. When you start controlling people's minds and beliefs, you have true control. So, the auto-da-fé of Maní is really Spanish colonialism writ large." To Bey, the discovery of destroyed incensarios is all the more important given how consequential the event was. "The archaeology provides actual evidence of the auto-da-fé," he says. "To hold the history in your hands, to dig it out of the ground, really makes the moment come to life." ■

Daniel Weiss *is executive editor at* Archaeology. *To see a reenactment of the 1562 auto-da-fé, go to archaeology.org/mani.*

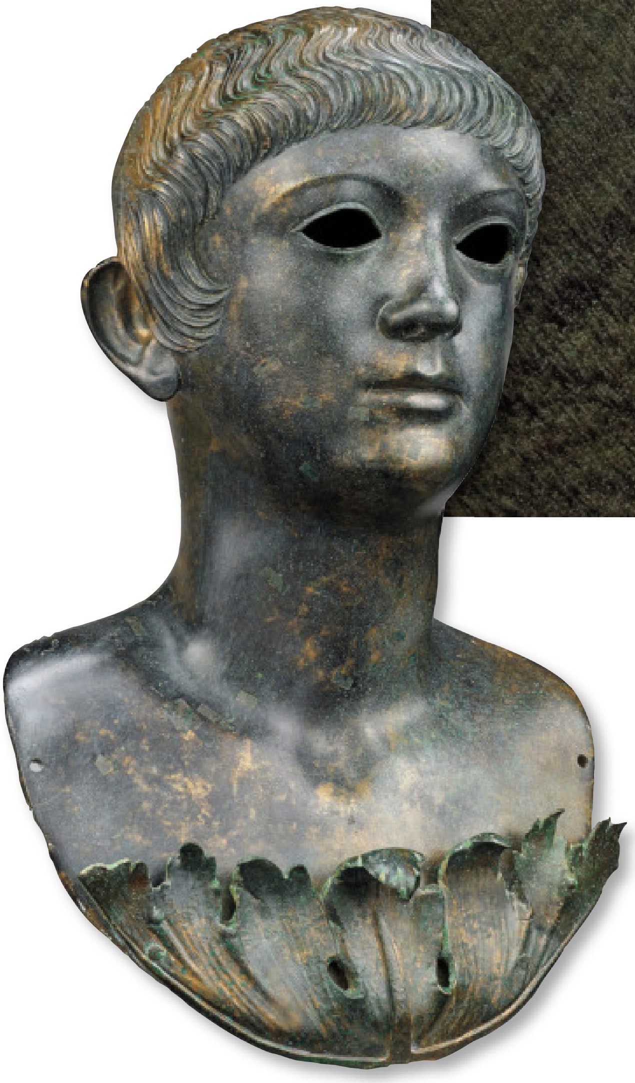
Temples to Tradition

A looted cache of bronzes compels archaeologists to explore Celtic sanctuaries across Burgundy

By Ben O'Donnell



The temple at the Gallo-Roman sanctuary in Couan in east-central France (pictured) was used from the late second or early first century B.C. to the late fourth century A.D. Shortly before its destruction, priests buried a hoard of 79 precious artworks there, including two life-size bronze portrait busts depicting young men, which were cast around A.D. 60.



Elderly and ailing, a potter named Georges-André Colas penned a six-page letter to the Regional Archaeological Service of Burgundy in October 2008. "Dear Sir or Madam, although I am aware of the tremendous scientific interest of the deposit of bronzes of Couan, I hesitated for a long time to make it known, because of the legal consequences of the circumstances of its discovery," he began. "However, I wanted to do it while I was still alive."

Thirty-one years earlier, in 1977, wrote Colas, he had taken a metal detector to a field in the oak-forested Morvan massif of east-central France. He knew that fragments of ancient masonry had been found on the property in the 1950s, suggesting a possible archaeological site. Detecting a faint signal, he grabbed a shovel and dug down about two and a half feet, where he struck a bronze bucket with a jar inside containing 871 Roman coins. Colas decided it would be best to return to

second or early first century B.C., before the Roman conquest of Gaul, roughly modern France. It ended in the late fourth century A.D., when much of the pagan past across the empire was being stripped for parts.

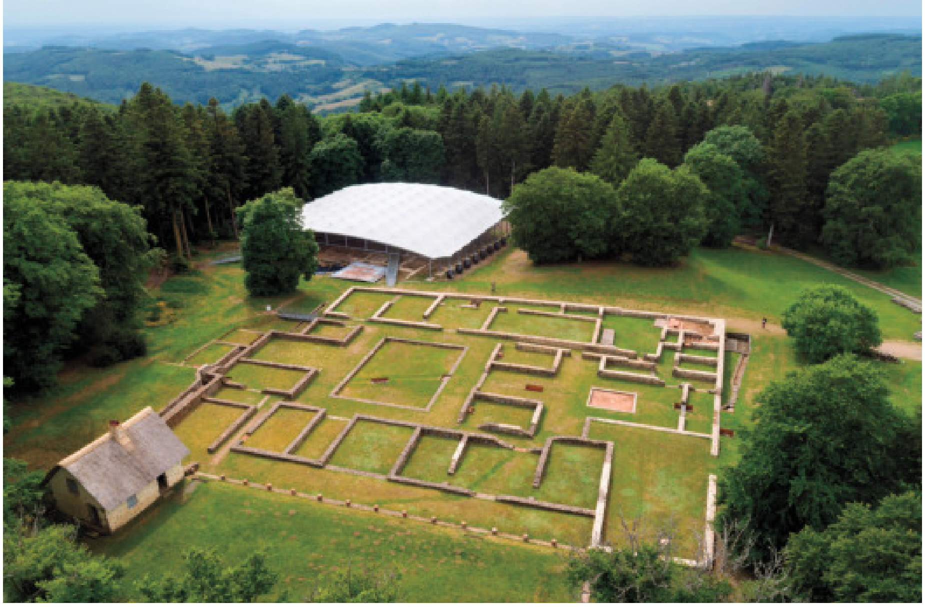
Starting around the same time as Colas' moment of truth, archaeologists in central and eastern France excavated one Roman temple after another. They were looking for earlier foundations belonging to the Celtic peoples who inhabited the region during the late Iron Age (ca. 450–50 B.C.), before Rome began to reshape the region. After Colas stepped forward to reveal his looting at Couan, archaeologists confirmed the presence of a rural sanctuary there using geophysical survey. Excavations beginning in 2019 have yielded artifacts ranging from a cult statue depicting a probable ancestor god to votive offer-

explore further under the cover of darkness.

Over two nights, from a single pit, Colas retrieved dozens of bronzes. Included in the haul were 14 statues of deities, 11 figurines of animals, two life-size portrait busts, two statuettes in the shape of wheels, myriad figurines and adornments representing gods and monsters, and an arca, or offering box. He also uncovered gold earrings, silver spoons, and a glass mirror. All told, the looter unearthed 79 ancient artworks, in addition to more than 7,000 gold, silver, and bronze coins. Colas sold most of the treasure in the 1970s and 1980s, then disappeared from the story until his confession.

Eight pieces from the hoard were ultimately acquired by the J. Paul Getty Museum and private collectors, their provenance by then a question mark. Just those eight artworks of the 79 are accounted for today. From Colas' detailed descriptions and sketches, the treasure appeared to scholars to be the wealth of a sanctuary covering most of its lifespan, which began in the late ings of everyday items.

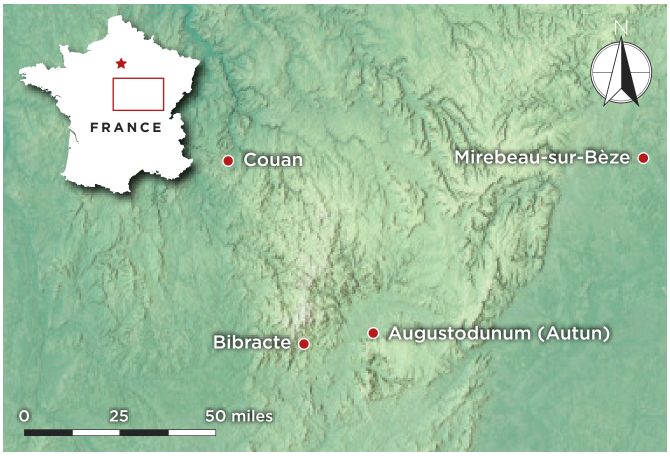
Archaeologists at Couan have also achieved a first in France. There are numerous documented hoards belonging to the Gallo-Roman people, a blended culture of continental western Europe's Celts and the Romans who ruled them for centuries. There are also hundreds of Gallo-Roman sanctuaries. But only in this speck of forest and farmland have scholars been able to unite parts of a looted Gallo-Roman hoard with its place of origin. Very few caches of this size containing this quality and variety of objects anywhere in the world, once stolen and scattered, have been reconnected with the places where ancient people put them.



Bibracte, a fortified hilltop settlement on Mont Beuvray, served as the capital of the Aedui tribe of Celts in the first century B.C., when its population likely reached 10,000.

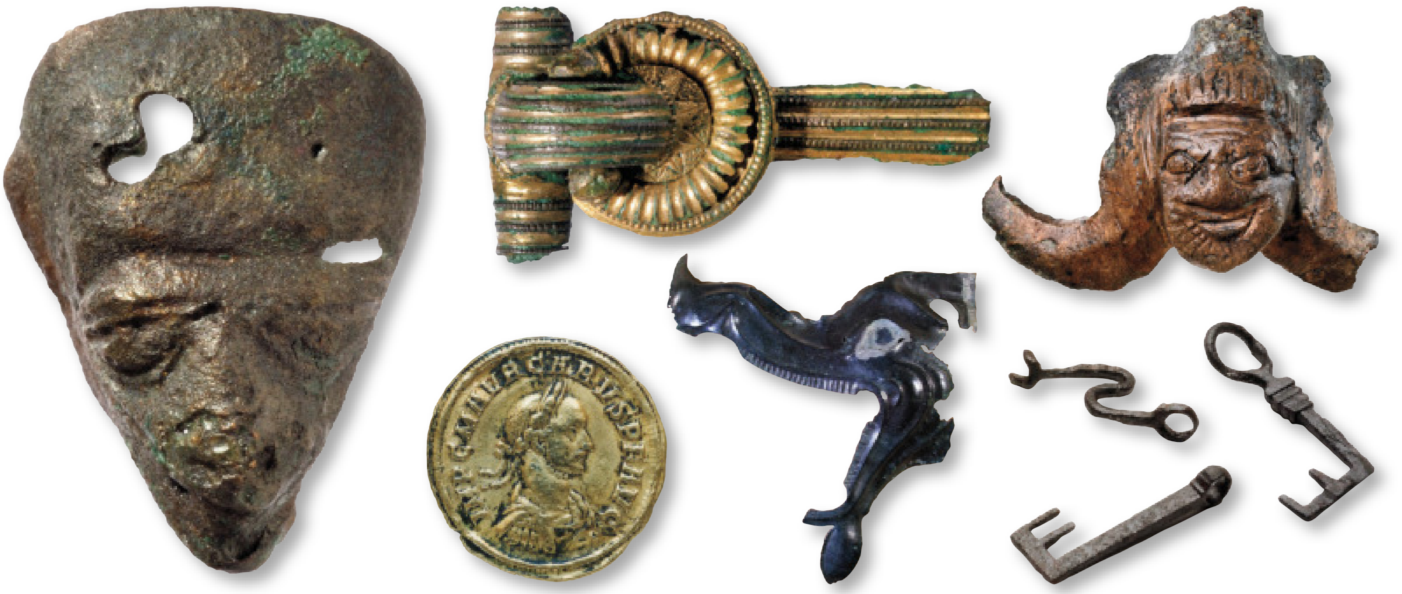
At other sanctuaries, too, archaeologists are attempting to understand how eastern Gaul's Celts worshipped during centuries of both slow transitions and jarring upheavals. One such site is Bibracte on Mont Beuvray, 36 miles south of Couan, which was established around the end of the second century B.C. At this time, Celts across western Europe were moving to compact fortified settlements called oppida such as Bibracte, which were usually located on hills and mountaintops. During the first century B.C., Bibracte's population is thought to have reached 10,000. The people there were served by a large complex, likely used for rituals, excavation of which is providing insight into a moment when their culture was half-Celtic, half-Roman. "It's a world between two worlds," says archaeologist Vincent Guichard, director of the Bibracte site, museum, and research center.

The past decade or so of sanctuary archaeology in France has illuminated this era of transition. By the second century B.C., the Celts of eastern Gaul had coalesced into tribes, identifying themselves, for example, as Aedui, Sequani, and Lingones. They knew the Romans intimately, often as allies in such contests as the Cimbrian War (113–101 B.C.), which brought incursions of Germanic tribes from the north and counterattacks from the Romans. Between the second century B.C. and the first century A.D., the people of eastern Gaul, variously called Gauls, Celts, and the La Tène culture by scholars, were allied with the Romans, conquered by them, and finally integrated into their empire. By digging to the deepest strata of sanctuary sites, archaeologists are aiming to elucidate the early ritual practices of the Celts, how their worship evolved, and which of their ancestral traditions persevered.



What happened at these sanctuaries, and in honor of whom, remains murky, but the intense archaeological activity in east-central France has resulted in partial answers. At first, the Celts appear to have venerated their ancestors. Later, they added to their pantheon hybrid Gallo-Roman deities, indigenous gods imbued with characteristics of Roman ones or vice versa. Artifacts excavated at the sanctuaries make clear that some were frequented by warriors, who offered intricately ornamented scabbards, bird-shaped helmets, and *carnyces*, or long-necked battle trumpets. Other sanctuaries appear to have been pilgrimage complexes that hosted travelers, and still others were used for ablution rituals. In places, amphoras and skeletons of sacrificed animals point to feasting. Many sanctuaries continued to operate for 500 years or longer. Based on their study of these sites, most archaeologists now believe that the Romans did not, for the most part, interfere with the Celts' sacred places and rites. "At the sanctuaries, the Roman conquest was not, in fact, a rupture for the Celtic people," says archaeologist Philippe Barral of the Marie and Louis Pasteur University. "We can see continuity in their use."

The first Celtic sanctuaries in eastern Gaul were demarcated as early as the late fourth century B.C. A Lingones site near the village of Mirebeau-sur-Bèze, just east of the city of Dijon, is the oldest known sanctuary in the region, dating to around 300 B.C., and its development neatly prefigures most of those that followed. In its first incarnation, the sanctuary comprised an unbuilt patch of land surrounded by a



Votive offerings found at Gallo-Roman sanctuaries include (clockwise from left) a bronze bucket handle attachment depicting a face, a bronze-and-silver fibula resembling a peacock tail, a bronze jug handle attachment perhaps depicting the face of the Roman god Silenus, three iron keys, a decorative element from a copper-alloy battle trumpet shaped in the form of a boar's mouth, and a gold coin showing the third-century A.D. Roman emperor Carus.

ditch and a smaller adjacent area. The former was likely a place where people gathered, the latter a sacred space. Around 160 B.C., a square wooden ritual structure was erected in the smaller area. In the first century A.D., a stone wall roughly traced the earlier ditch, separating the gathering area from the cult area, and a Gallo-Roman stone temple succeeded the Celtic wooden one. The function of these two spaces—one for assembling, one for cultic activity—remained unchanged for centuries.

Barral, who excavated Mirebeau-sur-Bèze in the 1980s and again from 2001 to 2007, observed similar structures in the stratigraphy of his many digs around eastern Gaul. The sanctuary temples, he noticed, were strikingly uniform. The buildings were originally constructed from wood and replaced with stone in the Roman period. As at Mirebeau-sur-Bèze, most temple areas were partitioned off or enclosed by a ditch that was later supplanted by a stone wall, sometimes after an intervening phase with a wooden or earthen wall. Most had a square, east-facing chamber in the center of the temple. At each sanctuary, some space was given over to laypeople.

At Mirebeau-sur-Bèze, Barral found that the Celts made ritual offerings of almost everything. Starting around 300 B.C., they brought ceramic vases and plates. During the second century B.C., they offered glass beads, iron keys, iron scythes, and other farm equipment, as well as spear tips, swords, shield bosses, and shrunken-down versions of drinking cups. In the first century B.C., they brought coins, along with cows, pigs, and goats to sacrifice. Excavations at a Sequani site in the present-day town of Mandeure near the Swiss border have yielded decorative elements from military emblems and carnyces, such as the pointy ears and toothy jaws of a menacing war boar. Archaeologists at Couan have unearthed more than 80 fibulas, or brooches, in 25 distinct styles, many of which are unusually small, impractical for adults to wear.

From 2013 to 2018, Barral co-led excavations at a sanctuary site called La Genetoye, which has one of the few standing temple ruins in eastern Gaul. The structure has been called, erroneously, the Temple of Janus since the sixteenth century. La Genetoye lies just outside the walls of Augustodunum, modern Autun, the metropolis that Roman urban planners designed for the Aedui when the emperor Augustus (reigned 27 B.C.–A.D. 14) relocated their capital 11.5 miles east from Bibracte. (See "Gaul's University Town," November/December 2021.)

Archaeologists suspected that the Aedui particularly cherished the La Genetoye site, and Barral wanted to know if they had worshipped there before the Romans built Augustodunum. In 2018, his team found traces of an older Celtic sanctuary beneath the temple. The preservation of old gods and consecrated places over centuries suggests that tradition and continuity had, indeed, mattered to the Celts. "Temples are built, or rebuilt, in places of memory," says Guichard. In addition to the temple, archaeologists unearthed an entire neighborhood of shops, baths, artisans' studios, and a theater, mostly dating to the first and second centuries A.D. Barral likens it to the Catholic pilgrimage campus of Lourdes in southwestern France.

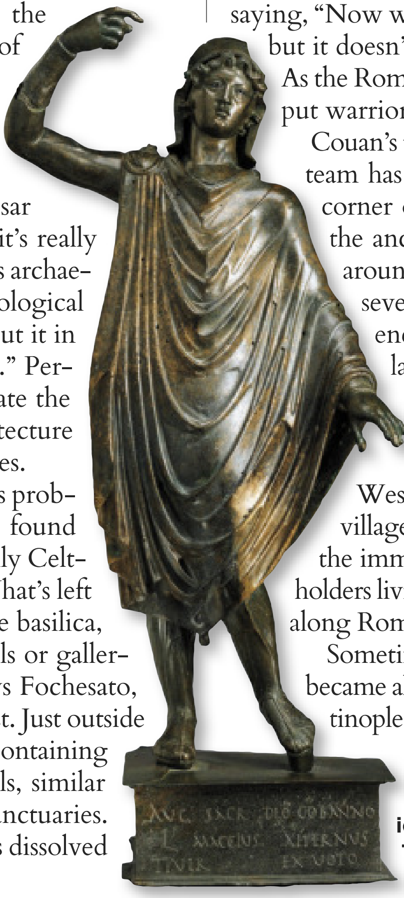
AFTER THE END OF the second-century B.C. wars between the Romans and Germanic tribes, the Celts of eastern Gaul embarked on another eventful century. Around the time Julius Caesar campaigned in Gaul between 58 and 50 B.C., self-Romanization became the fashion for the region's Celtic elite. Caesar himself camped in Bibracte, and it's probable that he wrote his *Commentaries on the Gallic War* there. "The people who had power were interested in Romanization," says Guichard. "But I think for most of the population, it was extremely violent." The most disruptive change may have occurred when Augustus compelled the Aedui to move from their mountaintop home of Bibracte to Augustodunum around 15 B.C. Although their new capital was more convenient to

A large public building in Bibracte, possibly a sanctuary, was built in a traditionally Celtic style at a time when Roman influence pervaded the settlement.

Roman roads than Bibracte, the highway veered well off the logical path to accommodate Augustodunum's placement. Romans would not have built a town for Romans there. The Aedui seem to have helped select the location. While no historians record the reason the Aedui chose the spot, it was very likely because the La Genetoye sanctuary—that old and holy place—was situated there.

The site of Bibracte, the Aedui's original capital, has proved even more reluctant to give up the secrets of its sanctuaries. Near its center of civic life, two public edifices in particular perplex archaeologists. The trouble begins on the main street with the earliest stone masonry structure on the site, a basilica dating to right around the moment when Caesar marched on Gaul. "It's not Gallo-Roman, it's really Roman—it has columns, it has antefixes," says archaeologist Andrea Fochesato, head of archaeological programs at the site. "You can take it and put it in northern, if not central, Italy, and it works." Perhaps the Aedui wanted to impress or emulate the Romans, nearly 50 years before most architecture in eastern Gaul trended toward Roman styles.

Yet Fochesato thinks this interpretation is problematic. "Recently, not far from here, we found another public building, which is really, really Celtic," he says. "And it's contemporaneous." What's left of that building, just 165 feet away from the basilica, is all troughs and postholes for wooden halls or galleries. "It's a classic Celtic sanctuary plan," says Fochesato, except that it is substantially bigger than most. Just outside this building, archaeologists uncovered pits containing coins, broken amphoras, and domestic tools, similar to the offerings at other Gallo-Roman sanctuaries. Perhaps over the millennia the acidic soil has dissolved any sacrificial animal bones.



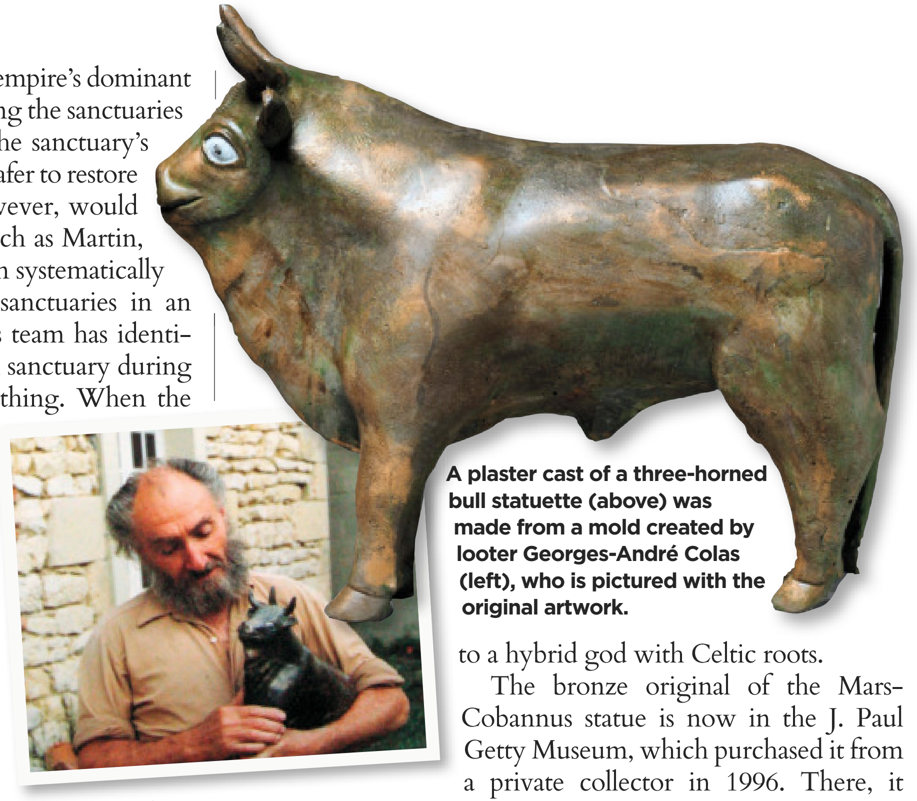
This unusual statue of a deity, which was pilfered from the Couan sanctuary, has been identified as a depiction of Mars-Cobannus. The god wears some Celtic-style garments, including leggings.

Since 2019, a team now led by archaeologist Rebecca Perruche of the Marie and Louis Pasteur University has been excavating at Couan. The site derives its name from Cobannus, a previously unknown Celtic deity of iron and the forge, whose name appears on six inscriptions found at or near the site in this iron-ore-rich area. Cobannus was, therefore, probably the reigning god there. Archaeologists have unearthed no spectacular bronzes during six seasons of digging, but the sanctuary has provided in other ways. In its first season, the team found the torso of a fifth-century B.C. statue of a Celtic man. The stone figure would have once stood around 2.5 feet tall, with ample hips and legs, his arms appearing to clutch his chest. Crosshatching of a cuirass ripples across the man's midriff and back. Only three other Celtic statues with similar features have been found in Europe. "It was a real person at some point, a warrior or someone from the elite," says Perruche. "But then with centuries passing, maybe people thought, 'It's an ancestor, he's heroic.' And then, 'He's a god.'" Around the first half of the first century A.D., the statue was broken and buried under the temple's Roman-period altar. Perruche imagines Roman authorities saying, "Now we're going to do things a little bit differently, but it doesn't mean that we don't respect your religion." As the Romans banned sacrificing weapons, perhaps they put warrior deities to rest, too.

Couan's temple was fully excavated by 2024. Perruche's team has now turned their attention to the southeast corner of the sanctuary complex, including parts of the ancient road next to the site as well as the wall around the temple. The team is also investigating several curious outbuildings abutting the temple enclosure. Perruche is especially intrigued by a large building covering 2,200 square feet that was constructed with thick, mortared Roman-era stone walls and once had a roof. She believes it may have been a gathering hall. West of the sanctuary, there was a Gallo-Roman village, about 15 minutes away by foot. The rest of the immediate area was likely occupied by rich landholders living in villas on sprawling farms. Carts trundled along Roman country roads toward Augustodunum.

Sometime around A.D. 363, the priests at Couan became alarmed. Even though the emperor in Constantinople, later branded Julian the Apostate (reigned A.D.

361–363), sought to restore paganism as the empire's dominant religion, Christians had likely begun harassing the sanctuaries in Gaul. Couan's priests decided to bury the sanctuary's most valuable objects. It would, perhaps, be safer to restore its glories at a calmer moment. Julian, however, would be the last pagan emperor. Soon, zealots such as Martin, bishop of Tours from A.D. 371 to 397, began systematically ransacking and despoiling Gallo-Roman sanctuaries in an attempt to stamp out paganism. Perruche's team has identified at least 18 holes dug around the Couan sanctuary during this period by someone looking for something. When the sanctuary was burned around A.D. 380, however, the treasure remained hidden. Even archaeologists failed to locate the pit that had concealed the hoard Colas had emptied until 2022, in a yard well beyond the enclosure wall. Although most sanctuaries were destroyed, La Genetoye's temple survived through the Middle Ages because it was used as a fortified watchtower.



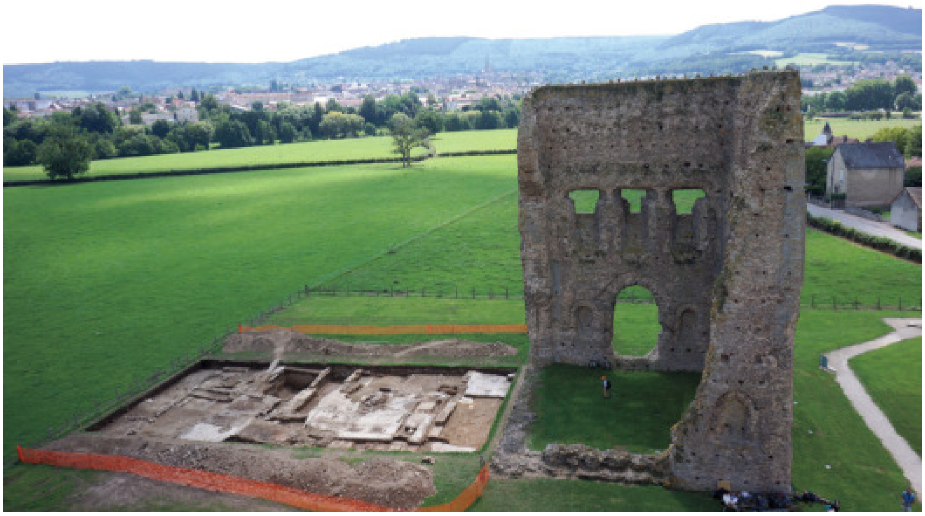
A plaster cast of a three-horned bull statuette (above) was made from a mold created by looter Georges-André Colas (left), who is pictured with the original artwork.

After wrapping up her first week of excavation at Couan in 2025, Perruche presented an exhibition of plaster casts of the sanctuary's bronzes at the municipal museum in the nearby town of Avallon. The ensemble, created from expert molds Colas himself made, has a centerpiece: a helmeted, cloaked god standing 2.5 feet tall that scholars have identified as Mars-Cobannus. Although the dedicatory inscription on the base is addressed to Cobannus, similarities to other Gallo-Roman Mars statues suggest an association with the Roman god. It's unusual to see Mars fully clothed, but his leggings and tunic make sense for this statue because they resemble Celtic men's garments. The statue was donated to the sanctuary in the second century A.D. by Lucius Maccius Aeternus, a duumvir, or ruling magistrate, in the service of Rome, paying homage to a hybrid god with Celtic roots.

The bronze original of the Mars-Cobannus statue is now in the J. Paul Getty Museum, which purchased it from a private collector in 1996. There, it rejoined several other objects looted by Colas. These include a pair of portrait busts depicting two youths, one with an elaborate ruffle of acanthus leaves curling out from the base, both dated to around A.D. 60, and the arca, which was cast in the second century A.D.

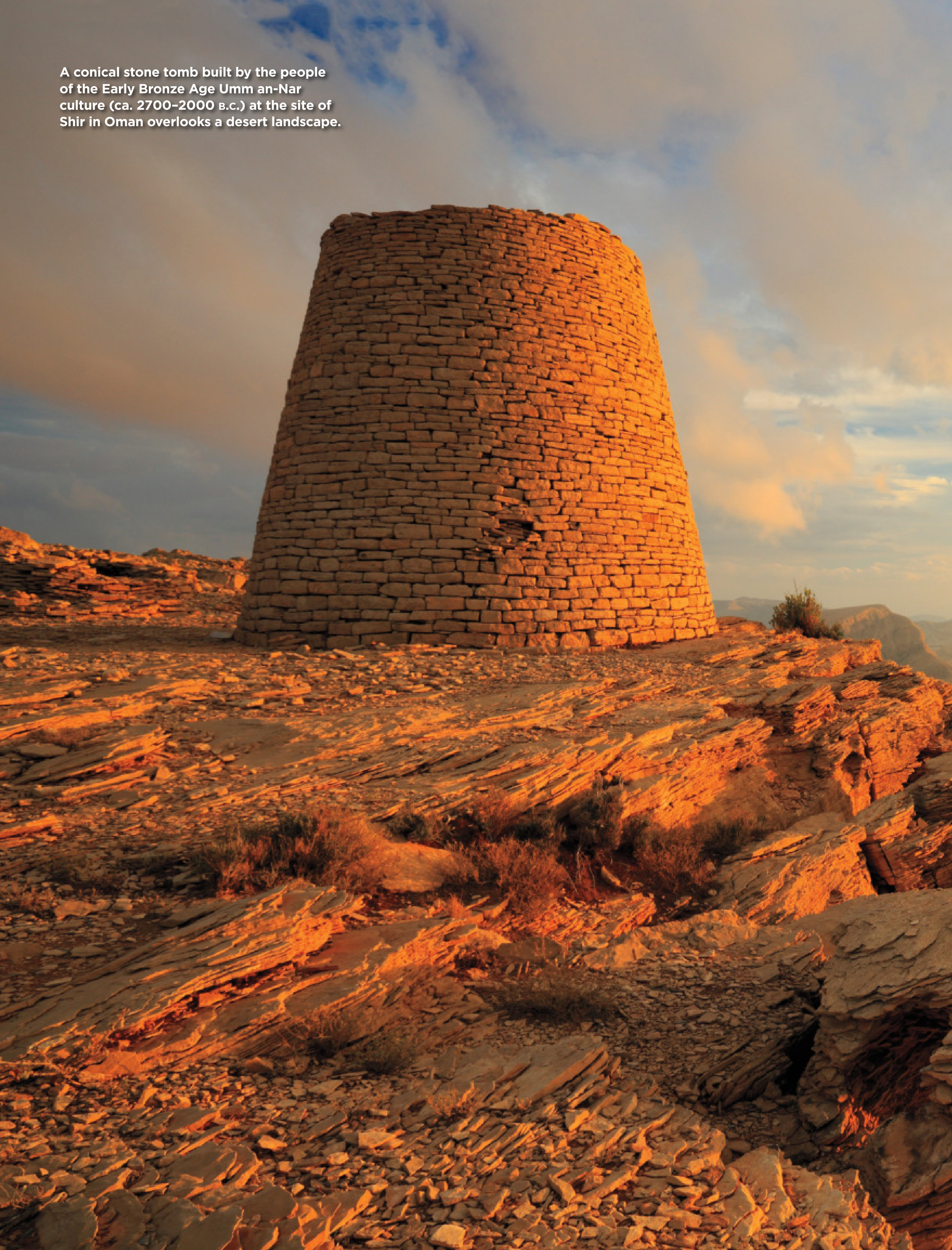
At the gallery in Avallon, casts of other, smaller and odder pieces looted from the site beguile visitors as well. Two small figurines depicting protector gods, nude but for their helmets and shields, are displayed along with those portraying the deities Mercury and Minerva, a fibula shaped like a dolphin, and a forearm-sized three-horned bull with wild eyes and a fleshy, wattled neck. Residents of Avallon visiting the museum have questions for Perruche, many of them what-ifs pondered out loud: *Will the eight bronzes looted by Colas ever be repatriated? And will they go not to Paris but to here, to home?* The French government has not opened that discussion with American institutions or collectors.

Perruche recently learned that Colas was once convicted of archaeological theft at another site. *How many other sites did he loot? How could no one have seen him prowling that field nearly 50 years ago?* As they peer at the plaster ghosts, townspeople are left to wonder what happened to their predecessors' precious gifts, which the sanctuary had protected for 2,000 years, and which were lost to modern greed in an instant. ■

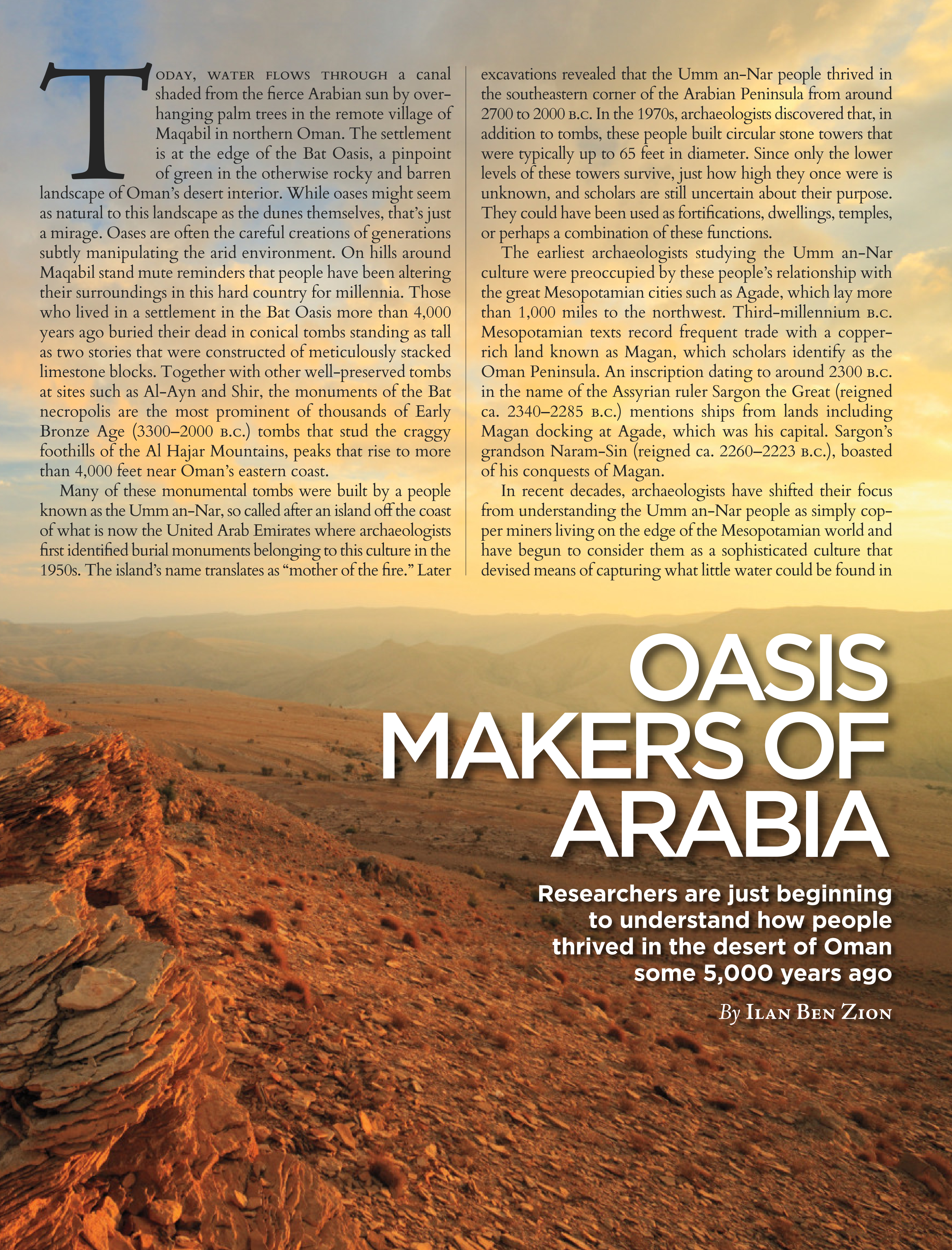


The Temple of Janus at the La Genetoye sanctuary near the city of Augustodunum (modern Autun) was once surrounded by Gallo-Roman shops, baths, artisans' studios, and a theater.

Ben O'Donnell *is a writer living in Melbourne, Florida. To see more images, go to archaeology.org/celts.*



A conical stone tomb built by the people of the Early Bronze Age Umm an-Nar culture (ca. 2700–2000 B.C.) at the site of Shir in Oman overlooks a desert landscape.



OASIS MAKERS OF ARABIA

Researchers are just beginning to understand how people thrived in the desert of Oman some 5,000 years ago

By Ilan Ben Zion

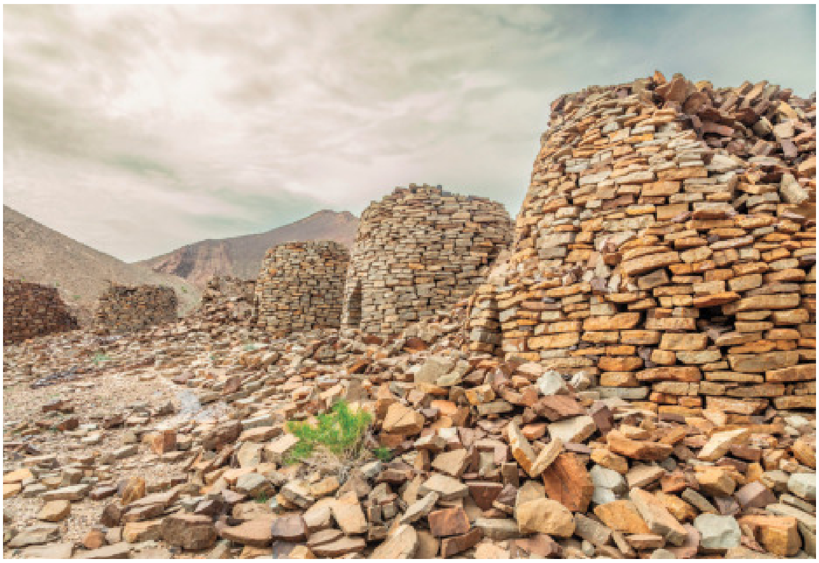
Today, water flows through a canal shaded from the fierce Arabian sun by overhanging palm trees in the remote village of Maqabil in northern Oman. The settlement is at the edge of the Bat Oasis, a pinpoint of green in the otherwise rocky and barren landscape of Oman's desert interior. While oases might seem as natural to this landscape as the dunes themselves, that's just a mirage. Oases are often the careful creations of generations subtly manipulating the arid environment. On hills around Maqabil stand mute reminders that people have been altering their surroundings in this hard country for millennia. Those who lived in a settlement in the Bat Oasis more than 4,000 years ago buried their dead in conical tombs standing as tall as two stories that were constructed of meticulously stacked limestone blocks. Together with other well-preserved tombs at sites such as Al-Ayn and Shir, the monuments of the Bat necropolis are the most prominent of thousands of Early Bronze Age (3300–2000 B.C.) tombs that stud the craggy foothills of the Al Hajar Mountains, peaks that rise to more than 4,000 feet near Oman's eastern coast.

Many of these monumental tombs were built by a people known as the Umm an-Nar, so called after an island off the coast of what is now the United Arab Emirates where archaeologists first identified burial monuments belonging to this culture in the 1950s. The island's name translates as "mother of the fire." Later excavations revealed that the Umm an-Nar people thrived in the southeastern corner of the Arabian Peninsula from around 2700 to 2000 B.C. In the 1970s, archaeologists discovered that, in addition to tombs, these people built circular stone towers that were typically up to 65 feet in diameter. Since only the lower levels of these towers survive, just how high they once were is unknown, and scholars are still uncertain about their purpose. They could have been used as fortifications, dwellings, temples, or perhaps a combination of these functions.

The earliest archaeologists studying the Umm an-Nar culture were preoccupied by these people's relationship with the great Mesopotamian cities such as Agade, which lay more than 1,000 miles to the northwest. Third-millennium B.C. Mesopotamian texts record frequent trade with a copper-rich land known as Magan, which scholars identify as the Oman Peninsula. An inscription dating to around 2300 B.C. in the name of the Assyrian ruler Sargon the Great (reigned ca. 2340–2285 B.C.) mentions ships from lands including Magan docking at Agade, which was his capital. Sargon's grandson Naram-Sin (reigned ca. 2260–2223 B.C.), boasted of his conquests of Magan.

In recent decades, archaeologists have shifted their focus from understanding the Umm an-Nar people as simply copper miners living on the edge of the Mesopotamian world and have begun to consider them as a sophisticated culture that devised means of capturing what little water could be found in the desert. “We want to understand their world on its own terms, not just through how the people of Magan may have interacted with Mesopotamians,” says archaeologist Eli Dollarhide of New York University, who codirects the Bat Archaeological Project with Jennifer Swerida of Leiden University.

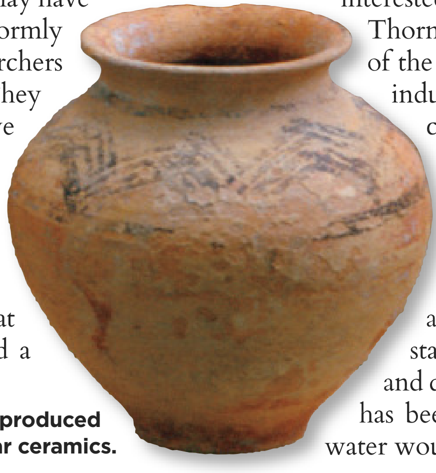
Evidence of the Umm an-Nar people’s everyday lives is scarce. Towers and tombs considerably outnumber excavated homes, and archaeologists rarely find organic remains at Umm an-Nar settlements, making radiocarbon dating difficult. In fact, scholars’ grasp of Oman’s remote past has been so hazy that archaeologists have only established a basic chronology of the Early Bronze Age there in the last decade. Recent excavations in and around Oman’s Early Bronze Age structures, however, are yielding an increasingly clear picture of the Umm an-Nar people and how they shaped the world around them.



Well-preserved beehive-shaped tombs at the site of Al-Ayn are characteristic of the Hafit culture (ca. 3300–2700 B.C.), which preceded the Umm an-Nar culture.

THE FIRST PEOPLE TO establish substantial settlements in Oman were members of the Hafit culture (ca. 3300–2700 B.C.). Like their descendants, the Umm an-Nar people, the Hafit people built towers as well as large beehive-shaped cairn tombs at sites such as Al-Ayn. They also mined copper and established trade routes with neighboring peoples. Around 2700 B.C., the Umm an-Nar people began to bury their dead in more complex tombs that seem to have held the remains of generations of families. “Umm an-Nar tombs are much larger and more elaborate than their Hafit predecessors,” says Swerida. “They have multiple interior chambers, they’re sometimes lined with bright white stone that really catches the eye, and they can have dozens, or even hundreds, of individuals in them. Men, women, young and old—everybody from a certain social group seems to go into the same tomb.”

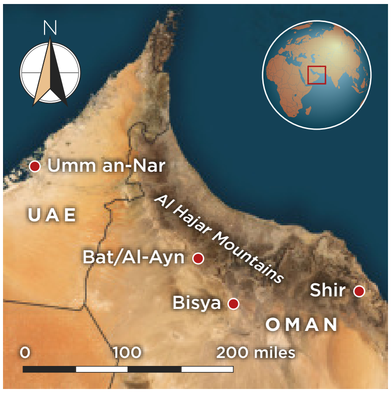
Third-millennium B.C. Mesopotamian texts allude to a “king of the land of Magan,” but archaeological excavations at Umm an-Nar sites have revealed no evidence that these people were ruled by a king. In fact, archaeologists have found no indication that the Umm an-Nar people lived in a hierarchical society. Their conical tombs may have been grand, but they have yielded uniformly humble grave goods, which some researchers suggest point to an egalitarian society. “They didn’t develop the same hierarchies that we see in the countries they traded with,” says archaeologist Stephanie Döpper of the University of Würzburg. “They must have known that in other parts of the world people had kings and that there were elites. But they don’t seem to bother.” She adds that the Umm an-Nar people may have lived a seminomadic existence, migrating seasonally with their herds from one location to another depending on the availability of water and food. “It doesn’t necessarily mean that everybody was mobile in the society,” Döpper says. “But that is one of the key strategies I think they had.” A partially peripatetic way of life may explain the scarcity of surviving Umm an-Nar houses. The total number of houses known from the period across the whole region is fewer than 100. Swerida and her colleagues have only found around 15 houses at Bat, which is the largest Umm an-Nar settlement.



This pot is typical of domestically produced Umm an-Nar ceramics.

On the other hand, archaeologists have discovered large amounts of Umm an-Nar pottery. Imported ceramics are some of the oldest artifacts suggesting that the people of Bronze Age Oman had trade contacts with Mesopotamia. This trade was largely mediated by the people of Dilmun in modern-day Bahrain (see “Desert Paradise Found,” May/June 2025). The oldest domestically produced pots in the region, from the early third millennium B.C., bear the hallmarks of influence from people of the Indus Valley in present-day India and Pakistan. “What happens in the Bronze Age in the third millennium is suddenly the areas around Oman become interested in Oman,” says archaeologist Christopher Thornton of the Penn Museum, former director of the Bat Archaeological Project. “The ceramic industry goes from nothingness—there’s no ceramics—and suddenly they’re producing really nice ceramics.” Archaeologists have long assumed that in order to make these sophisticated ceramics and to mine the copper that was so important for trade, the Umm an-Nar people would have needed a robust agricultural system that produced staple crops such as wheat, barley, legumes, and dates. Though direct evidence of agriculture has been slim, scholars have assumed managing water would have been critical to their prosperity.

Present-day Oman is one of the world's most arid countries, with the mountainous north receiving an average annual rainfall of between six and 12 inches, comparable to the state of Nevada. But the area wasn't always so dry. Monsoon rains that today barely reach Oman's southern coast once pushed much farther north. Geologists believe the peninsula was lusher as recently as 8,000 years ago. Oman's Empty Quarter, today a vast sea of dunes, was home to lakes that existed as recently as 3500 B.C.



As global climatic conditions caused monsoons to shift southward, Arabia began to undergo desertification. Around 2700 B.C., when the Umm an-Nar culture first developed, the climate was more humid than it is today, but grew progressively drier over subsequent centuries. "Aridification inspired or drove a lot of technological change," says archaeologist Joseph Lehner of the University of Sydney, who codirects the Archaeological Water Histories of Oman Project. Lehner notes that the same mountains that contained precious copper acted as a kind of reservoir for water, trapping rainfall in underground aquifers that local people learned to tap in order to irrigate their crops.

Excavations at sites including Bat indicate that traditional water-management methods used by Omani farmers today—such as the *aflaj* channels that distribute water from mountain springs to oases—have rudimentary antecedents in the Bronze Age. The Umm an-Nar people also built dams and huge systems of ditches to capture and direct rainfall. "They tried to get the most out of the resources that they had," Döpper says. Thornton believes that one of their main objectives was not simply to harness water, but also to capture rich sediments carried by mountain runoff and direct them to fields that had shallow soil. At an area that members of the Bat Archaeological Project excavated just outside the oasis, they unearthed four houses situated around an oval depression filled with sediments that had been trapped from mountain runoff. "It shows an incredible control of the environmental limitations of this region," says Thornton.

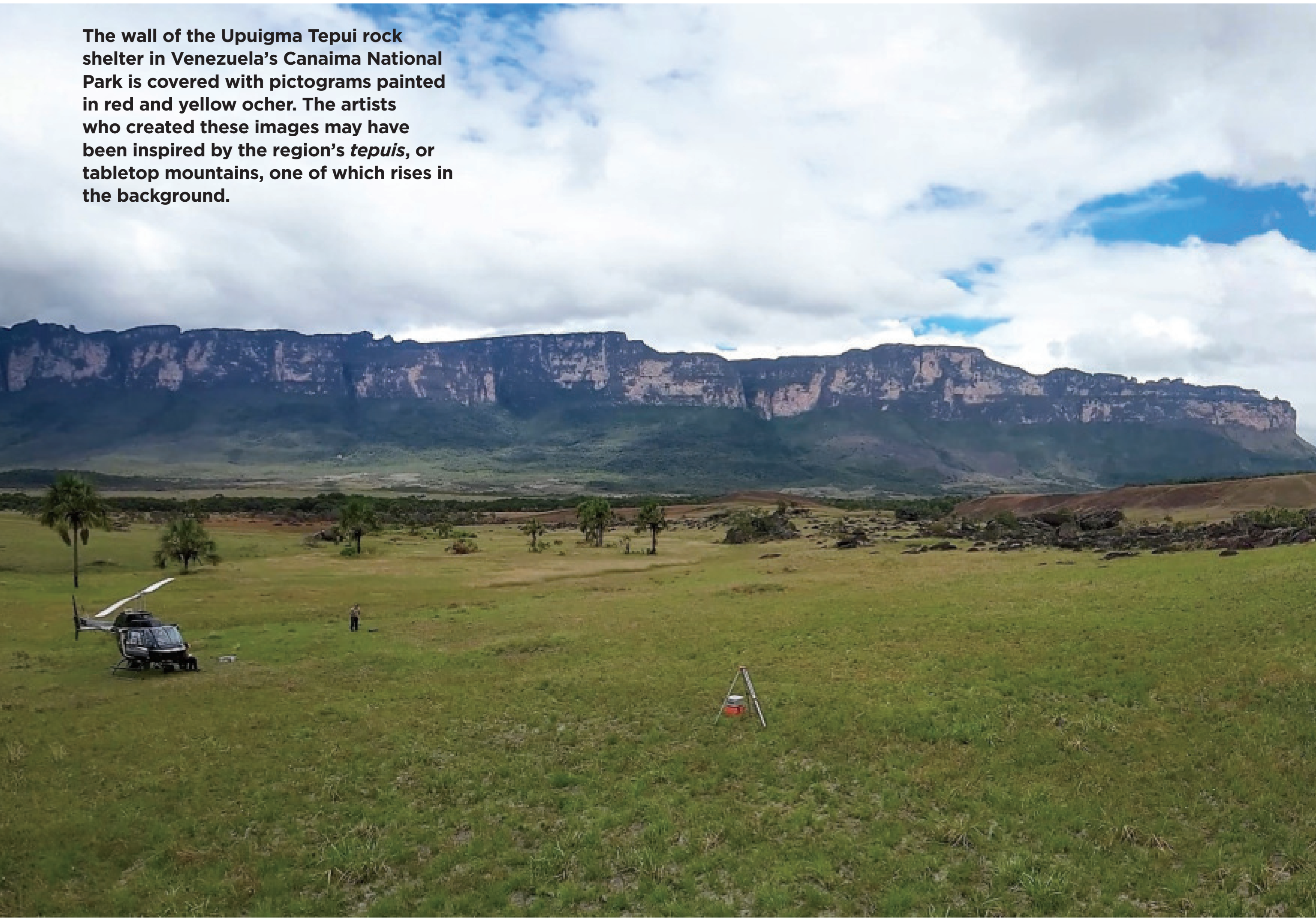
Archaeologists excavate the ruins of an Umm an-Nar tower at the site of Bisya that measures up to 72 feet in diameter and may have played a role in water management.

It's possible that some of the roughly 100 known Early Bronze Age towers in Oman—some two-thirds of which are still unexcavated—may have played a role in these nascent efforts at desert farming. A team led by archaeologist Michael Harrower of Johns Hopkins University recently studied satellite imagery of Umm an-Nar sites and found a strong correlation between the locations of towers and wells. "Around these towers, you start to find date palms and people creating little oases," he says. "They're clearly related in some way to tapping groundwater."

One such site is Bisya, on the edge of the Empty Quarter near the southern end of the Al Hajar Mountains. A team co-led by Mathilde Jean of the British Museum unearthed trenches around an exceptionally large tower there measuring up to 72 feet in diameter that may have been used to channel seasonal rainfall. The team also discovered the remains of date pits and cereals, which rarely survive at Umm an-Nar sites. "People have said for years that there was agriculture in the Umm an-Nar period," says Jean, "but there was very little direct evidence." The plant remains from Bisya have since been radiocarbon dated to the third millennium B.C., offering strong support for the idea that the Umm an-Nar people relied on a proto-oasis system of agriculture.

Around 2000 B.C., the Umm an-Nar way of life came to an end. Archaeologists have found no sign of a great cataclysm, collapse, or conquest, but at this time people stopped building monumental towers. "The system starts to get wobbly," Thornton says. "Civilizations collapse because of a multitude of things. There's not a single trigger." Perhaps the increasingly arid climate and dwindling water resources compelled the Umm an-Nar's descendants to adopt even more mobile ways of life. The people of the Wadi Suq culture, which came after the Umm an-Nar, buried their dead in more modest graves, but continued to live near areas such as the Bat Oasis. Perhaps they even occupied some of the Umm an-Nar towers. They must have marveled at the edifices built by their ancestors and wondered how they had fashioned a life for themselves in the harsh desert. ■

Ilan Ben Zion *is a Jerusalem-based freelance reporter working on a book about the Crusades.*

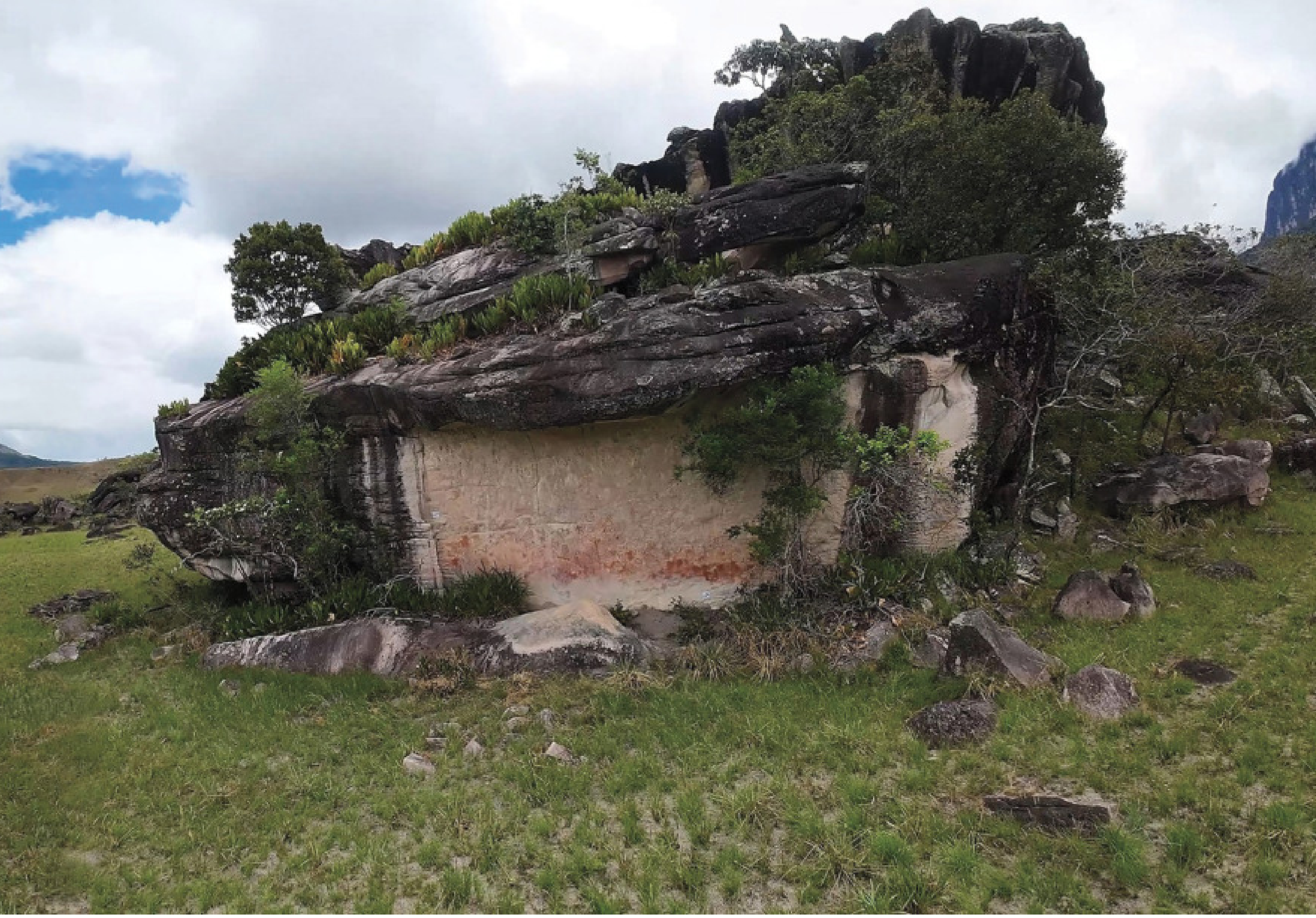

The wall of the Upuigma Tepui rock shelter in Venezuela's Canaima National Park is covered with pictograms painted in red and yellow ocher. The artists who created these images may have been inspired by the region's *tepuis*, or tabletop mountains, one of which rises in the background.

SEARCHING FOR VENEZUELA'S UNDISCOVERED ARTISTS

Inspired by their otherworldly landscape, ancient people created a new rock art tradition

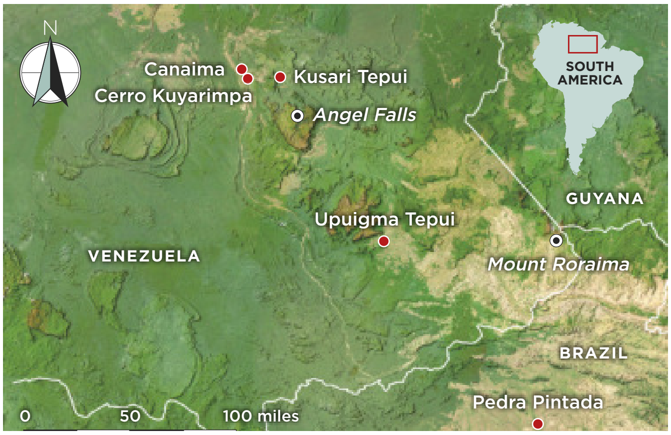
By Eric A. Powell

Where the borders of Venezuela, Brazil, and Guyana meet, Mount Roraima rises some 9,200 feet above sea level. It is the highest of the *tepuis*, or tabletop mountains, that loom over the otherworldly landscape of Venezuela's Canaima National Park. According to a foundational myth of the region's Pemón people, Mount Roraima is the stump of the divine tree that once bore all the world's fruits and vegetables. They believe the tree was cut down by the trickster hero Macunaíma, whose rash act triggered a flood that ushered in the age of humans. Each tepui, which in the Pemón language means "house of the gods," has its own biosphere that is home to a unique array of flora and fauna. Among them is Auyán Tepui, from whose peak flows the world's tallest waterfall, known as Angel Falls. Biologists and archaeologists surveying these dis-

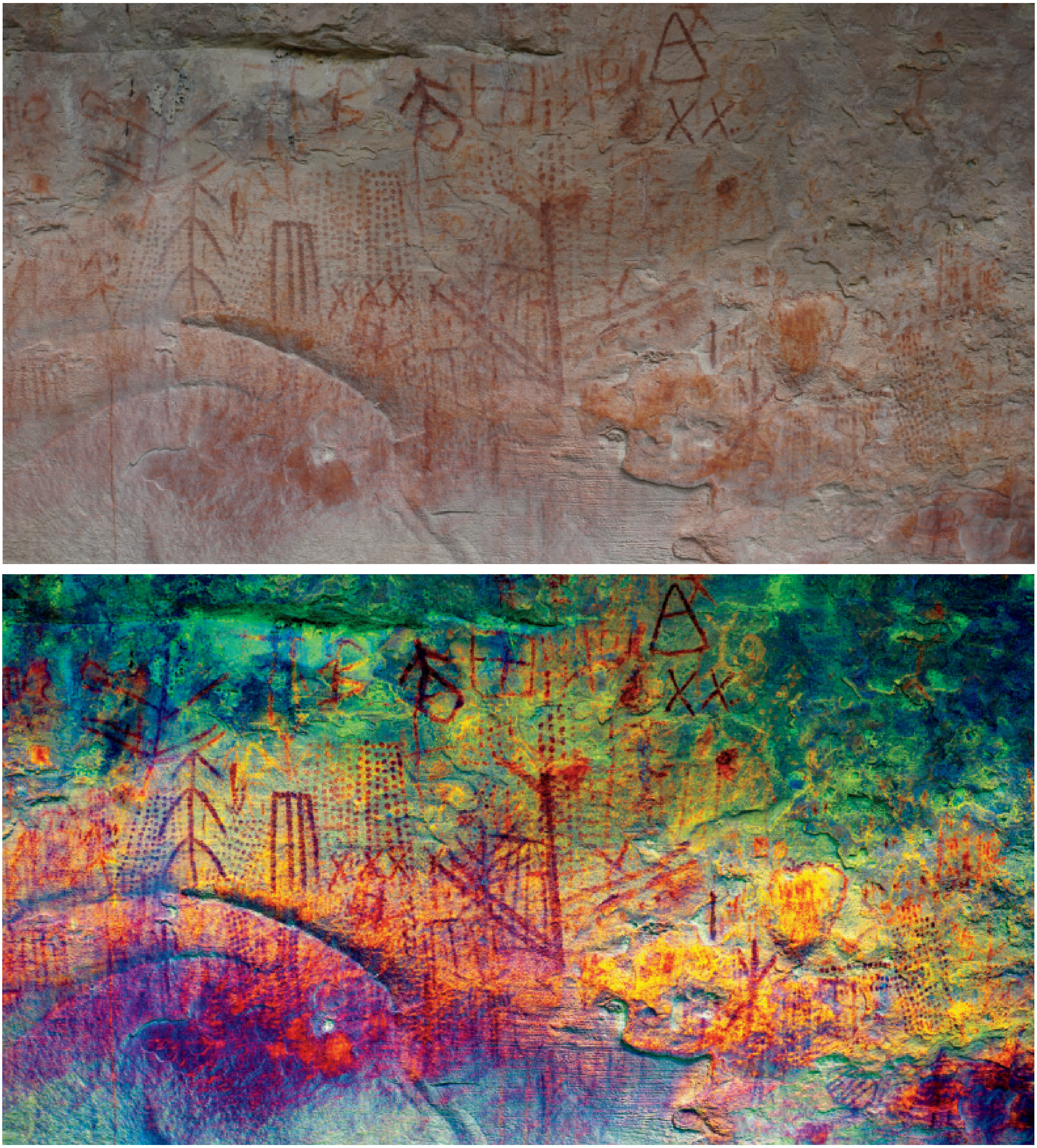


tinctive environments have found no signs of human habitation, or even traces of an ephemeral presence, that might suggest ancient peoples regularly visited these mountaintops. The sheer cliffs of the tepuis make them notoriously forbidding even for modern climbers. “It makes sense ancient people wouldn’t want to make an effort to scale them,” says archaeologist José Miguel Pérez-Gómez of Simón Bolívar University. Even though people in the past may have decided against ascending these tepuis, Pérez-Gómez thinks the mountains must have once been central to the beliefs of ancient cultures, much as the Pemón consider them sacred today.

In recent years, a team led by Pérez-Gómez and Roger Swidorowicz of the Manoa Foundation have discovered a vast, previously unrecorded archaeological landscape around the tepuis in Canaima National Park. In 2009, Pérez-Gómez received word that tourists had chanced across an array of red and yellow pictograms on the wall of a rock shelter in a large sandstone boulder at the foot of a mountain known as Upuigma Tepui. Close analysis of the pictograms showed that the rock shelter’s face was dense with geometric motifs such as crosses, squares, and triangles, as well as patterns of dots and a few figures that could be abstract human forms. The busy mixture of symbols defies any effort to extract a coherent narrative from the imagery. “We don’t try to interpret the meaning of the images,” says Pérez-Gómez. “Getting in the heads of people who made abstract images and lived thousands of years ago isn’t realistic. But we can say that the images were related to rituals, and that the rituals undoubtedly centered on Upuigma Tepui.”

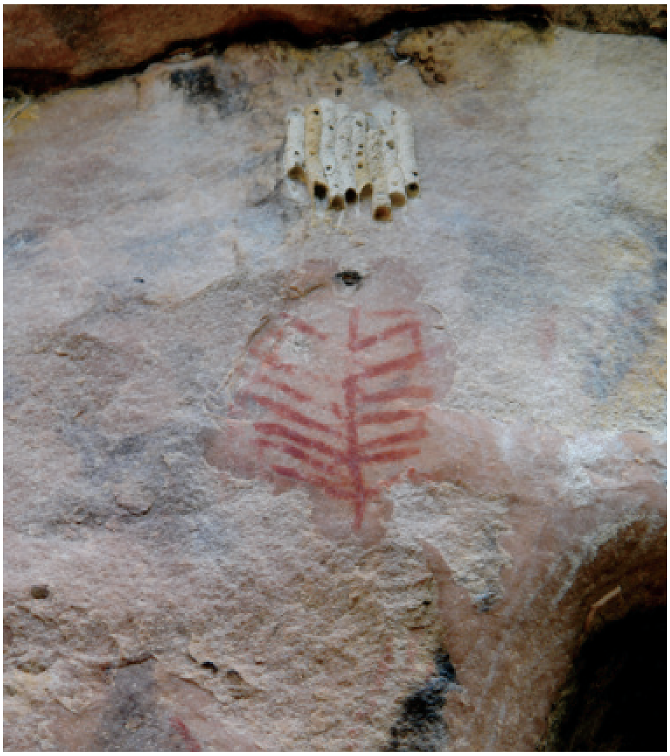


The discovery of rock art at the base of Upuigma Tepui inspired Pérez-Gómez and Swidorowicz to search for similar



A photograph (top) of the abstract designs on the Upuigma Tepui rock shelter shows the paintings as they appear to the naked eye. A version of the photograph enhanced using a program called DStretch (above) renders the profusion of abstract images more clearly.

sites in the rest of the park, whose savannas, rivers, and tepuis are spread across an area the size of Maryland. Years of helicopter and drone surveys led to the discovery of an additional 20 rock art sites in the shadows of the park's tepuis. The team was following in the footsteps of other explorers such as Sir Walter Raleigh, who led the first European expedition into the region in 1595 and recorded the earliest Western description of the tepuis, and Alexander von Humboldt, the celebrated German naturalist who wrote about the mountains after visiting Venezuela at the turn of the nineteenth century. Another prominent Western traveler to the region was Sir Everard im Thurn, a British official and explorer whose account of the



A leaf-shaped image was painted on an outcropping at the base of Kusari Tepui. It resembles a similar figure found on the wall of the Upuigma Tepui rock shelter.

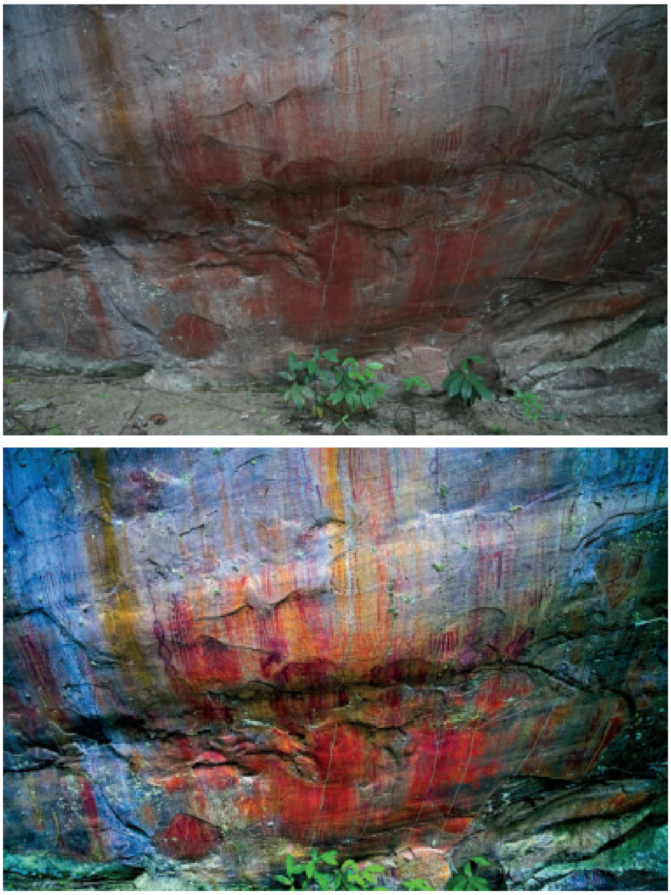
first successful Western expedition to the summit of Mount Roraima in 1884 inspired Sir Arthur Conan Doyle to write his pioneering science-fiction novel *The Lost World*. For his part, Pérez-Gómez is more concerned with how this landscape must have made an impression on the people who first moved across the savanna and made it their home. "When you are there looking up at the tepuis, you can't help but stand in awe of them," says Pérez-Gómez. "It had to have been the same for the people who first saw them thousands of years ago."

THE EARLIEST PEOPLE TO set foot on the South American continent probably did so more than 10,000 years ago. These people, who were descendants of hunter-gatherers who had migrated to North America thousands of years earlier, split into two groups. One group headed south and eventually reached Patagonia (see "Surviving a Windswept Land," July/August 2023), while the other headed east along the Caribbean coast, reaching the savannas of what is today Canaima National Park. For millennia, both groups hunted using spear-throwers known as atlatls. The spears they hurled at game such as sloths, giant armadillos, and giant anteaters were tipped with what researchers call fishtail-type points.

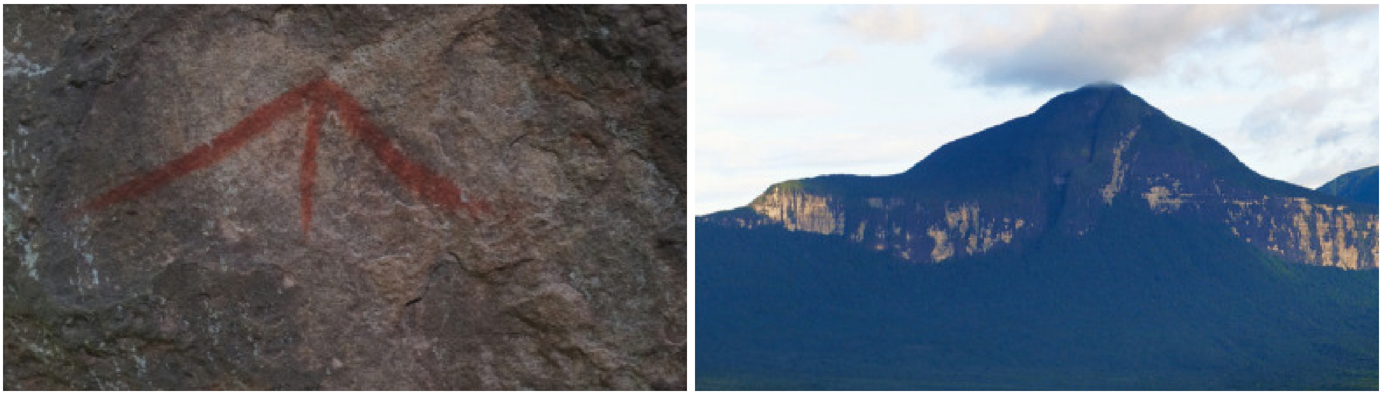
Across northern South America, people used ocher paint to create largely abstract images on the walls of rock shelters. It is difficult to date rock art painted with ocher, which is a mineral and thus cannot be radiocarbon dated. While some archaeologists believe the earliest examples of these paintings could be as much as 8,000 years old, most researchers think they were probably made beginning some 5,000 years ago. When Pérez-Gómez and his team studied the images at the Upuigma Tepui rock shelter, they recognized the designs as similar to some that had been previously recorded at sites such as Brazil's Pedra Pintada, a large boulder covered with abstract symbols, and at other sites in Colombia and Guyana. Using the image-processing program DStretch, developed specifically to render faint rock art visible, the team made out individual symbols from the riot of imagery at the site. In addition to purely abstract X- and pyramid-shaped symbols, these include red and yellow ocher representations of figures that resemble leaves, stars, and nets. "Nothing like this had been known from this area," says Swidorowicz. "That got us curious about what more might lie in the park."

The team consulted the local Pemón people most familiar with the park, who live in the village of Canaima, to learn what they knew about rock art in the region. To the researchers' surprise, prominent members of the community, including its former leader, Roberto Simon, and its shaman, José Garcia, were not familiar with the rock art at sites such as Upuigma Tepui. "They didn't consider themselves custodians of these sacred places," says Pérez-Gómez, "but they encouraged us to study them."

Reasoning that boulders near other tepuis might bear similar rock art panels, the team set out to survey the landscape around as many of the mountains as possible. At the foot of the isolated



A photograph (top) and a version of the image enhanced using DStretch (above) show the dense network of pictograms found on the Kusari Tepui outcropping.



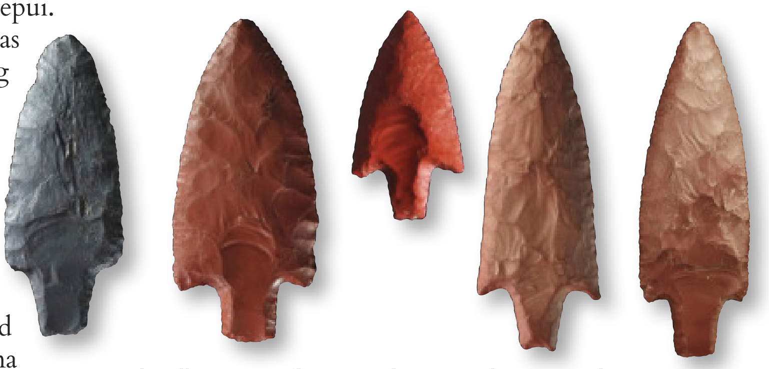
A painting (left) on the Kusari Tepui outcropping resembles the silhouette of Tepochi Tepui (right), a peak visible from the site.

peak of Kusari Tepui, they found a rock outcropping covered in brush that bore even fainter images than those at the Upuigma Tepui rock shelter. Using DStretch, the team discovered that the outcropping was decorated with red ocher images that rivaled in number those found at Upuigma Tepui. These include the net symbol, as well as a graceful rendering of a mountain-like shape whose profile resembles that of Tepochi Tepui, a distant peak visible from the outcropping. “That was confirmation for us that the tepuis inspired at least some of these images,” says Pérez-Gómez. He also noted that a leaf-shaped image found at the very top of the outcropping, some 30 feet aboveground, resembled another the team had recorded at a similar height at the base of Upuigma Tepui.

During a helicopter flight, the team spotted an additional outcropping just a few miles southwest of Kusari Tepui. The artwork at this site, known as Cerro Kuyarimpa, was dominated by net-like images, as well as many resembling combs and ladders. As similar as the images at the three sites were, the team noticed that many of the images at Kusari Tepui and Cerro Kuyarimpa were executed more crudely than those at the Upuigma Tepui rock shelter. This, together with the large number of rock art sites in the park, has led the archaeologists to speculate that the abstract rock art tradition known from such sites as Pedra Pintada was perhaps developed in its earliest form by people living near the Canaima tepuis. On the ground near many of the rock art panels, the team has found the fishtail-type projectile points used by the earliest people to reach South America, suggesting some of the rock art in Canaima National Park could have been made by people who lived approximately 9,000 years ago.

From the Canaima heartland, this style was perhaps then taken up by other peoples, through migration or through the webs of long-distance trade that bound hunter-gatherers together. “We began to wonder if we had discovered a new culture that once spread its ideas over a wide area,” says Pérez-Gómez. The team believes the people who belonged to this tradition, which they call the Canaima culture, may be key to understanding the prehistory of northern South America. “As archaeologists, saying that we’ve come across a previously unknown people is not something we take lightly,” says Pérez-Gómez. “But we feel confident these are people who we’ve overlooked, and their artistic tradition was really the foundation for art across this part of South America.”

SOMETIME AROUND 4,000 years ago, the Canaima people began farming and seem to have changed their ritual and artistic practices. Over the past few years, the team has discovered a number of sites in the park where ancient artists made petroglyphs, or engraved images in rock faces, rather than painting them with ocher. Although direct dating of these panels isn’t possible, the fact that they depict recognizable animals such as fish and snakes suggests they were created by people who lived after the heyday of making largely abstract images was over. “We think it’s the same people living here from the beginning up until the introduction of agriculture 4,000 years ago,” says Pérez-Gómez. “But they adopted new ways of representing the world around them.”

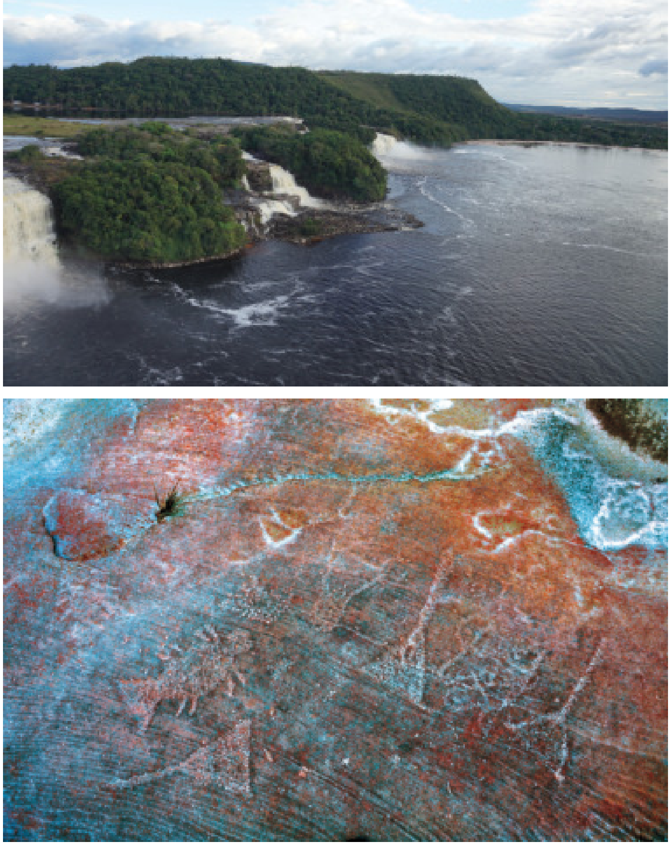


Projectile points discovered near rock art sites in Canaima National Park include many known as fishtail-type points.

Near a waterfall less than a mile from the village of Canaima, the team came across a series of faint petroglyphs carved into the rocky riverbed of a tributary of the Orinoco River. By applying DStretch to these badly eroded images, the researchers found that they included depictions of fish, as well as enigmatic broom-like figures. During the dry season, these images, which lie in shallow water, are exposed and only begin to be covered by the river with the onset of the rainy season in midwinter. Pérez-Gómez suspects that they perhaps were used as calendars by the farmers who made them. “You can imagine them monitoring these images to keep track of the seasons,” he says.

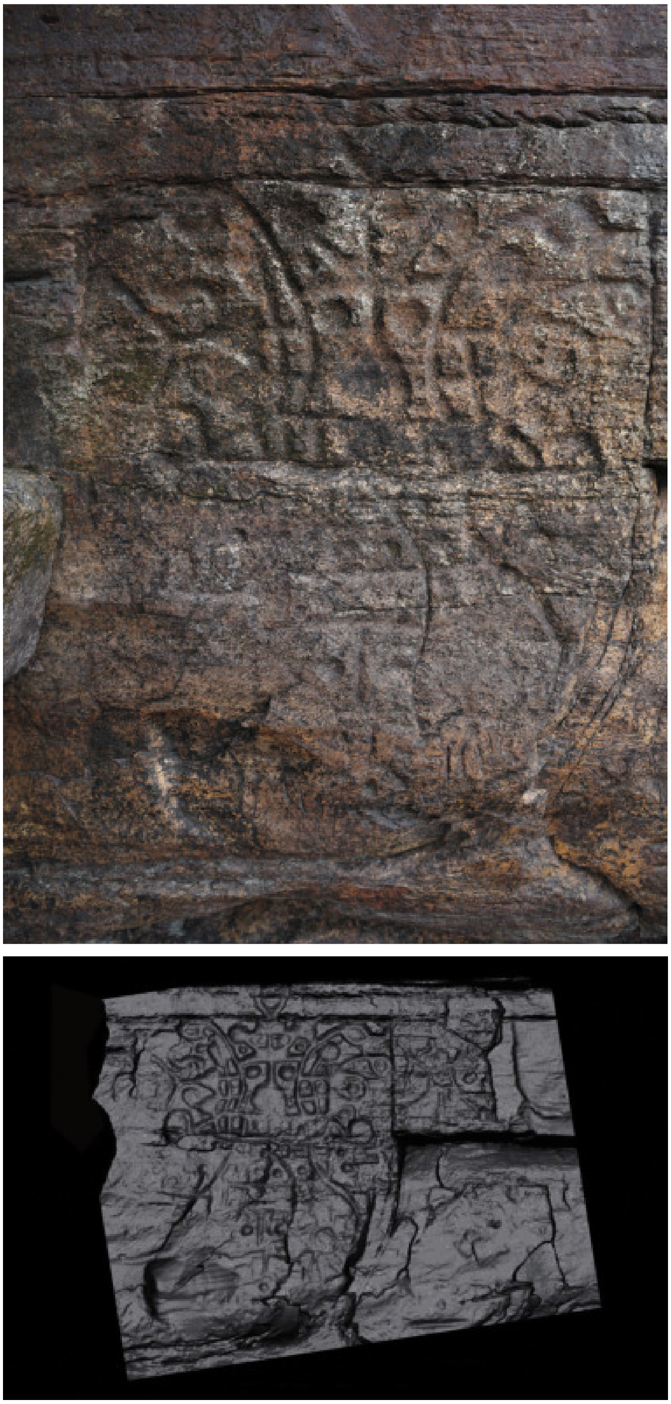
Recently, the team identified another set of petroglyphs in the park associated with a river. On a cliff face overlooking a stretch of rapids, they discovered petroglyphs depicting two figures whose appearance is similar to those made by people in the Andes. These figures face the river and wear headdresses that resemble ones worn by the people of the Tiwanaku culture, who lived from about A.D. 800 to 1100 near the shores of Lake Titicaca in what is today western Bolivia, some 1,500 miles away. It's possible these Tiwanaku-style images represent a foreign tradition adopted by the Canaima people, or they could suggest that a new group had moved into the region.

Most scholars believe that the Pemón people who now live on the savannas of southeastern Venezuela migrated there some 600 years ago. What happened to the Canaima people is unclear. "I think their descendants are still here somewhere," says Pérez-Gómez. Ancient DNA does not preserve well in the tropics, complicating genetic studies of prehistoric people, but it's possible that some of today's Pemón could trace their descent to those who left behind the rich array of rock art that Pérez-Gómez and his colleagues continue to discover in the park.



In a shallow rocky riverbed near a waterfall (top) less than a mile from the village of Canaima, archaeologists identified faint petroglyphs (above) depicting fish and broom-like figures.

Recently, the team has turned their focus to the slopes of Mount Roraima, where they have found a field of small boulders carved with abstract images including X- and chain-shaped figures, as well as spirals, all of which might hark back to the ocher images found elsewhere in the park. Here, where the legendary hero Macunaíma created the world as the Pemón know it, the team hopes to discover a new chapter in the history of the long relationship between humans and the tepuis of Canaima. ■



A photograph of a petroglyph (top) carved on a cliff face in Canaima National Park and a 3D image of the carving (above) show that it resembles figures made by the Tiwanaku people, who lived in the Andes from about A.D. 800 to 1100.

Eric A. Powell *is deputy editor at* ARCHAEOLOGY. *For more images of rock art archaeologists have discovered in Canaima National Park go to archaeology.org/canaima.*

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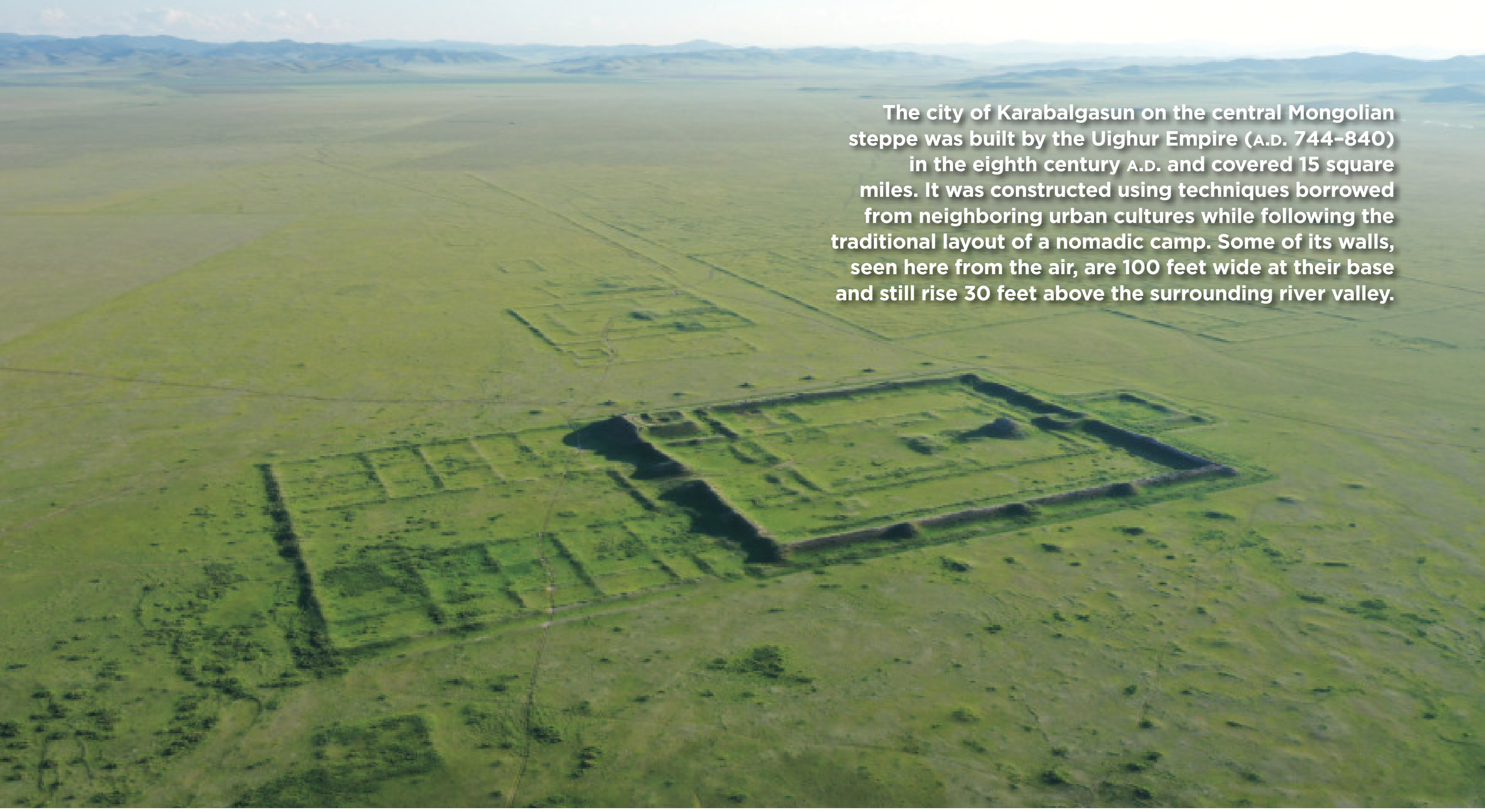


The city of Karabalgasun on the central Mongolian steppe was built by the Uighur Empire (A.D. 744–840) in the eighth century A.D. and covered 15 square miles. It was constructed using techniques borrowed from neighboring urban cultures while following the traditional layout of a nomadic camp. Some of its walls, seen here from the air, are 100 feet wide at their base and still rise 30 feet above the surrounding river valley.

LETTER FROM MONGOLIA

BUILDING THE BLACK CITY

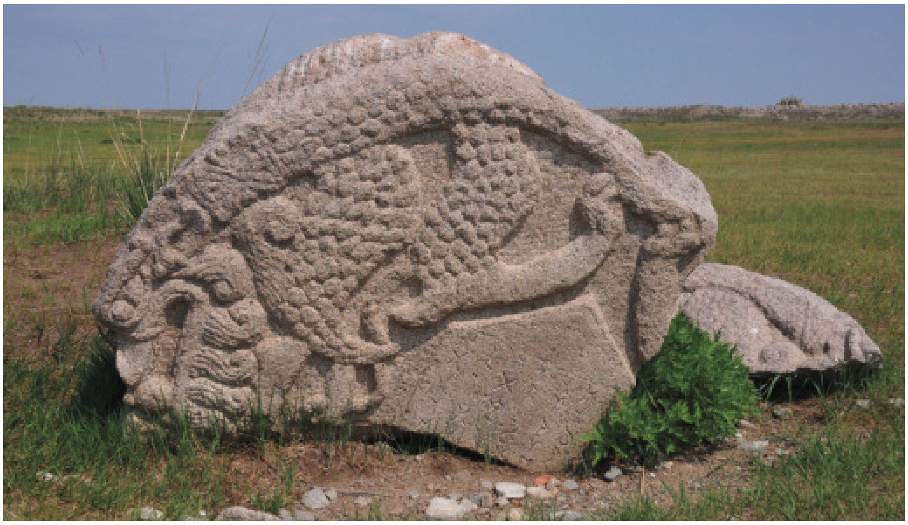
Why the nomads of the Uighur Empire constructed a medieval urban center like no other

By ANDREW CURRY

The story of how cities come into being usually goes something like this: Mobile groups settle down and start to farm. Agricultural surpluses, in turn, make it possible for some people to spend their days engaging in activities other than farming, leading to, for example, castes of priests and armies of soldiers with their associated bureaucracies. Eventually, people completely abandon their nomadic past, and some settlements become cities. Some of these cities become capitals of states or even empires. It's a story as old as the mudbrick urban centers of Sumer and Akkad in Mesopotamia. But on the Eurasian steppe over the last 1,500 years, this process has sometimes been turned on its head. There, nomadic tribes came together to form centrally ruled states—all while staying on the move. A few of these nomadic groups then did something surprising: They recruited skilled workers from neighboring states and built settlements on the expansive grasslands surrounded by walls, featuring palaces and temples, and crisscrossed by streets. In a word, cities.

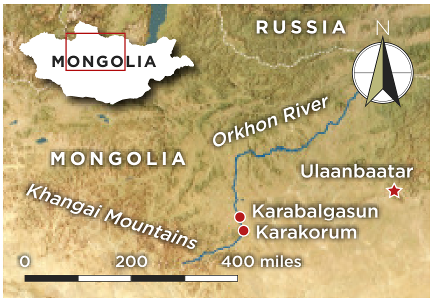
Likely the best-known examples of this unusual phenomenon are the cities built by the Mongols. In 1220, using the spoils of his military conquests across Eurasia, the Mongol ruler Genghis Khan (reigned 1206–1227) founded the city of Karakorum in present-day Mongolia's Orkhon Valley. The unspectacular remnants of this once-great capital, eroded by time and now mostly covered by grass, can be found 200 miles west of the modern capital of Ulaanbaatar. Karakorum's walls enclose an area of a little more than a square mile, in which archaeologists have discovered the foundations of a huge Buddhist temple, the remains of what may be a Christian church, and remnants of Genghis Khan's palace, all hinting at the splendors that voyagers including Marco Polo described in vivid travelogues.

Just 15 miles north of Karakorum, on the banks of the Orkhon River, lie the ruins of Karabalgasun, a city that dwarfed the Mongol capital. Dating



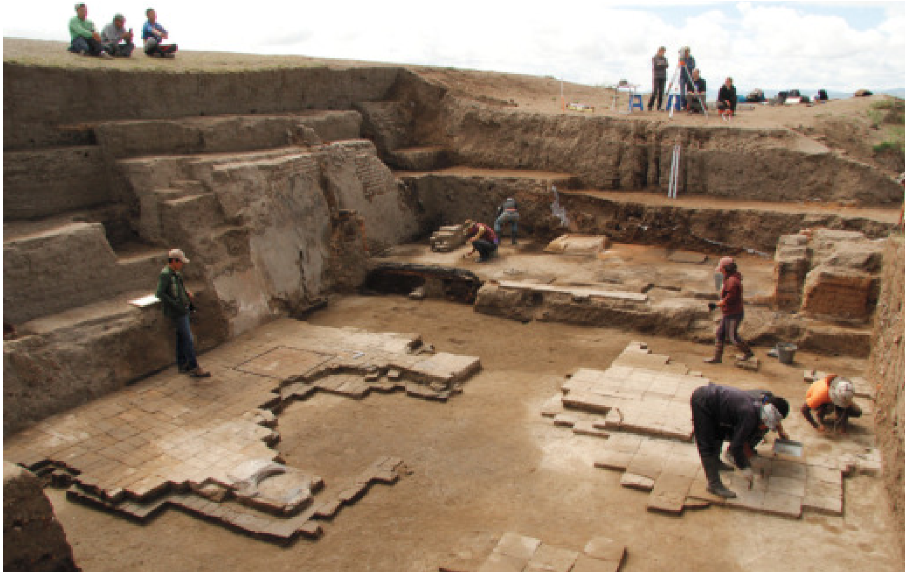
A carved stone inscribed in three languages—Old Uighur, Chinese, and Sogdian—found in Karabalgasun helped convince archaeologists they had found the Uighur Empire's capital.

to almost 500 years before the Mongol era, Karabalgasun was established in A.D. 744 or 745 by Kutlug Bilge Köl, the first khagan, or ruler, of the Uighur Empire (A.D. 744–840). At the time, this confederation of nine nomadic Turkic-speaking tribes ruled the Central Asian steppe and were part of a larger Turkic-speaking world centered around the Orkhon Valley and the Khangai Mountains of Mongolia. Under Kutlug Bilge Köl, these tribes established an alliance with China to the east and independent city-states such as the Sogdians to the west. (See "A Silk Road Renaissance," July/August 2020.) The short-lived Uighur capital was 13 times larger than Karakorum. It included a sumptuous palace and temples, massive earthen walls, verdant gardens, and busy manufacturing districts. "There's nothing quite like it, before or after," says archaeologist Susanne Reichert of the University of Bonn. In fact, the city remained by far the largest settlement on the steppe until at least the nineteenth century. Like the Mongols after them, the Uighurs had no tradition of permanent settlement or urbanism. "It's puzzling," says archaeologist Hendrik Rohland of the German Archaeological Institute. "Why do these nomad empires all of a sudden create cities like these in the middle of nowhere?"

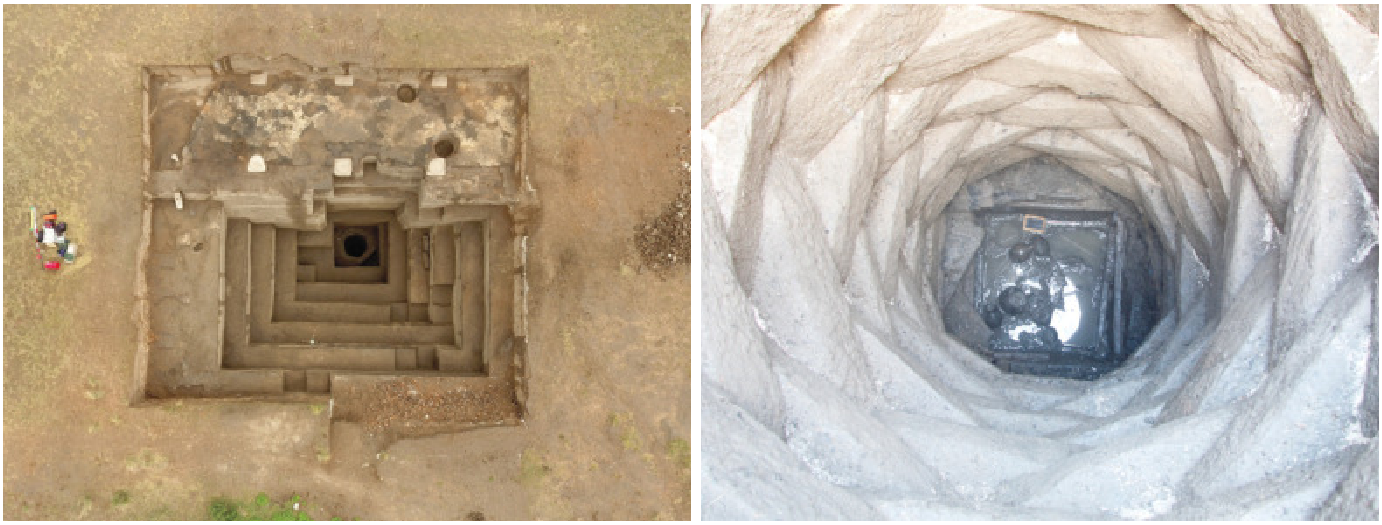


Over the last two decades, Rohland and his team have used both traditional excavation techniques and aerial surveys to study the Orkhon Valley floor. What they've found has led to a new understanding of the urban ambitions of the nomads who constructed Karabalgasun—its name in Mongolian means "black city" or "ruin"—as well as a better idea of who these people were and of their relationship with their Chinese neighbors. Researchers have also gained new insights into a city whose population may have shrunk and swelled with the seasons and which, rather than simply copying Chinese cities, reflected the essence of the Uighurs' nomadic culture.

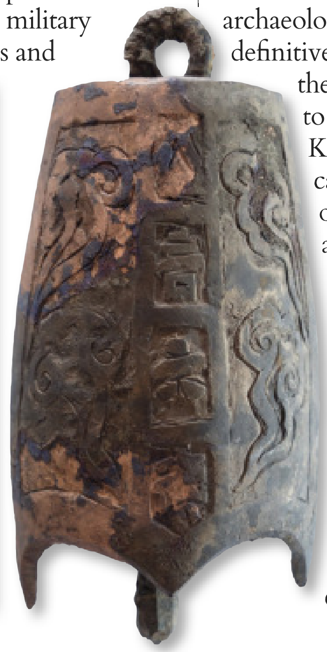
The first archaeological surveys of Karabalgasun took place more than 150 years ago, when a Russian-German expedition visited the region. Initially, the researchers, who also investigated the nearby ruins of Karakorum, thought they were walking among the remnants of the legendary Mongol capital. "People tended to confuse Karabalgasun for Karakorum because it's the bigger of the two,"



Excavations atop an artificial plateau in Karabalgasun revealed a palace complex and evidence that the structure had been burned in a cataclysmic assault.



A 43-foot-deep well (above left) was found in the palace complex at Karabalgasun. At the bottom of the well (above right), archaeologists discovered a lacquered wood rod decorated with a floral pattern (left and below) and a bronze bell (below right) with a Chinese inscription. These artifacts may have been thrown into the well during the attack on the palace.



Rohland says. The debate over which city was which lasted for decades, with many scholars refusing to believe the larger, more prominent ruins didn't belong to the Mongols.

A key find made in 1889 at Karabalgasun eventually helped nail down the identification. At that time, archaeologists uncovered a broken stone containing inscriptions that documented the military accomplishments and religious beliefs of the Uighur khagan. It provided the first evidence that the people who had built Karabalgasun were Uighurs. Called the trilingual inscription, the text on the stone is written in three languages—Old Uighur, Chinese, and Sogdian. By tying information found in the inscription together with historical records from the Chinese Tang Dynasty (A.D. 618–906) that describe trade with the Uighur Empire, archaeologists were able to state definitively that the ruins belonged to the empire's capital. According to a Persian chronicler, Karabalgasun's inhabitants called it Ordu-Baliq, or "city of the court." Eventually, archaeologists agreed that Karabalgasun was indeed the Uighur capital.

Despite the site's central location in the Orkhon Valley, after the first expedition it was largely ignored for more than a century. Karakorum attracted most of the archaeological attention in Mongolia after the end of communism in the early 1990s. With its links to Genghis Khan and his heirs, Karakorum has long been a point of national pride and is central to Mongolian identity. "Modern Mongolians don't see themselves as descendants of the Uighurs," says archaeologist Christina Franken of the German Archaeological Institute, "so Karabalgasun wasn't really a high priority."

Drawn by the city's impressive earthworks, Franken began leading excavations at Karabalgasun in 2007 with colleagues from the Mongolian Academy of Sciences. Even 1,200 years after it was abandoned, the city is easy to spot. At its center, the ruins of its walls still rise 30 feet or more above the surrounding grasslands. Some walls, though badly eroded, are nearly 100 feet wide at their base. Made from compacted earth supported by wooden beams, they represent a tremendous investment of resources and labor. The most dramatic part of the city is a flat-topped artificial hill, measuring 40 feet high and 180 feet long by 210 feet wide—the equivalent of eight basketball courts—on which sit the remnants of what seems to have been a palace, with multiple gates, watchtowers, and a commanding view of the valley.

Iron spikes called crow's feet designed to injure attackers were unearthed in and around the palace complex.

Even before she started excavating, Franken suspected that Karabalgasun had once been enormous, given its strategic location next to the Orkhon River, which flows through the valley year-round, making it ideal for watering cattle and sheep and growing crops. Starting in at least the Bronze Age (3300–1200 B.C.), the valley was occupied seasonally by people on the move. Around 200 B.C., one of the first empires to rise on the Eurasian steppe—a multiethnic coalition of tribes known as the Xiongnu (209 B.C.–A.D. 89)—established settlements there. Centuries later came the first Turkic-speaking nomads, then the Uighurs, and finally the Mongols. The Uighurs' predecessors saw the valley as spiritually and politically significant. Stone pillars carved in the sixth century A.D. standing in the foothills west of the river today identify it as "the place from where the tribes can be controlled." "The Uighurs wanted to take advantage of the location to legitimize their rule," Franken says.

The team struggled to map the city's full extent from the ground. In 2007, they managed to rent a helicopter—no easy feat in Mongolia at the time—to conduct a lidar scan of the area around the palace plateau. The scan revealed dozens of roads, platforms, and enclosures beneath the valley floor that were hard to see, or even invisible, from ground level. "That was our first inkling that Karabalgasun was much, much bigger than Karakorum," Franken says. The team detected a massive urban space, more than 12 square miles in all, along the Orkhon River's western bank. A central boulevard 100 yards wide ran through the middle of the city. "This is far more than you would need for daily traffic," says Rohland.

The survey also showed that at Karabalgasun's heart, a central plaza or parade ground the size of 20 football fields had been surrounded by the palace and temples. Based on artifacts and debris of metalworking and pottery production they have found, the team believes nearby buildings once housed craftspeople. To the palace's north, south, and west stand walled enclosures, earthen platforms, and open spaces.

Across many areas of Karabalgasun, however, archaeologists have yet to find much in the way of artifacts that might help them identify different districts or the purpose of specific enclosures. For scholars interested in nomadic cultures, the lack of artifacts is a familiar, and vexing, challenge. Nomads leave little in the way of material culture behind. Even long-lasting artifacts, such as pottery vessels, are often acquired from more sedentary neighbors, and therefore say little about the people who used them. For a city of Karabalgasun's size, there are relatively few of the discarded items that usually provide archaeologists with a window into the lives of past peoples. Franken thinks that's probably the case because the Uighurs didn't abandon all aspects of their traditional nomadic lifestyle. "All over the city, there are open spaces where yurt camps could be set up," she says. "But you can't see a yurt's footprint archaeologically." Even if parts of the city were dedicated to tents and yurts, its scope, and the effort that went into building it, presents archaeologists with a paradox. "It's astonishing that they have this huge urban area, even though they're nomads," Franken says. "It seems contradictory. They're always on the go, but they built these huge structures."

Contemporaneous Chinese chroniclers record that the Uighurs were a key ally of China's Tang Dynasty rulers, providing muscle to help quash the occasional internal rebellion, and sending cavalry troops during wars with neighboring states. The trilingual inscription references delegations sent between the two empires, along with claims that the Tang recognized Uighur rule. Like the Turkic tribes that preceded them, the Uighurs didn't work for free. The Tang bought their loyalty with Chinese princesses and bales of silk. "The Uighurs' attitude was 'We can help you, but we want to be paid,'" Franken says. And their services didn't come cheap. One Chinese source claims the Uighurs were paid as much as 500,000 pieces of silk each year, representing a vast fortune when sold farther west along the Silk Road. A permanent capital was, therefore, practical. "They needed somewhere to receive and store all those goods," says Franken.

One of the highest concentrations of artifacts the team uncovered was in and around the palace and nearby crafts quarter, where they found hundreds of objects made of metal and wood. Among these are irons with space inside for hot coals designed to smooth wrinkled silk. Archaeologists also found Chinese coins, jade tablets, and lacquered wood. Waste from iron, bronze, and copper processing indicates the presence of metalworkers and other specialists recruited from China and Persia, where these crafts had been raised to an art. These foreign artisans may not have been prepared for life as tent-dwellers on the move. "It seems craftspeople and merchants lived in permanent structures," Franken says, "and that yurts were erected alongside them."

The trilingual inscription and Chinese histories identify merchants and scribes from Sogdiana as key to administering the Uighur Empire. The Sogdians were spiritually influential, too. The inscription records that the Uighurs adopted their Manichaean religion. These nomads needed somewhere to worship, house bureaucrats, host traders, store luxury goods, and lock up prisoners of war captured during campaigns against rival steppe tribes and opponents of the Chinese. Their solution was Karabalgasun.

Ever since archaeologists discovered Karabalgasun and other cities founded by nomads, including Karakorum, scholars have maligned them as mere imitations of sophisticated Chinese settlements, and therefore incapable of revealing much about Uighur or Mongol culture. "People always dismissed nomads as having no ideas of their own when it came to urban planning," Franken says. After visiting Chinese cities, the thinking went, nomads left in awe, determined to create their own copies. The team's early lidar scans reinforced this perception, showing a dense concentration of large buildings around the palace plateau in the north and the rest of the city in the south, a pattern typical for Chinese royal architecture at places such as Chang'an, a city in western China that served as an imperial capital from 202 B.C. to A.D. 907.

By 2018, aerial survey methodology had undergone a revolution. That year, the team brought drones and digital imaging software to explore more of the vast site. Slowly, Karabalgasun's full layout came into focus. Researchers identified additional structures, and it became clear that their earlier survey had missed large swaths of the city. The new drone images revealed ghostly outlines of platforms, walls, and other structures radiating out in a huge semicircle from Karabalgasun's palace and surrounding administrative complex. The team learned that the city actually covered more than 15 square miles, but there was nothing to the east of the palace except the Orkhon River. That matched the layout of a traditional Uighur nomadic camp, in which the khagan's yurt, or *ger*, was at the easternmost point, and thus the first to greet the rising sun. "No one was allowed to put their tents in front of the khagan's," Rohland says. "The city follows the layout of a nomad encampment, rather than a prefabricated idea borrowed from another culture."

Archaeologists learned from excavations that the palace complex had been surrounded by high walls and had two fortified gates. Inside, it included a paved courtyard ringed by columns, a 60-by-60-foot building, and a deep well. This type of architecture mingles Chinese influences with Central Asian traditions. Excavations have also shown that the palace was built on a foundation of rammed earth, a technique common in Chinese architecture from the period. Like Karabalgasun in its entirety, the plan of the complex also echoes the layout of a traditional Uighur camp, with the palace on the eastern edge of the plateau.

Other aspects of the city, too, reflect the nomadic practices of its rulers. Unlike a typical urban settlement, Karabalgasun's population might have changed dramatically over the course of the year, growing in warm summers as herders brought their animals to feed on the plentiful grass on either side of the river. In winter, when temperatures might have dropped to as low as 40 degrees below zero Fahrenheit, the river froze over and people likely dispersed, retreating to smaller valleys nearby where it was easier to find food. Such seasonal occupation may help explain the contrast between Karabalgasun's extensive footprint and the relative scarcity of artifacts in much of the city. "There aren't many garbage or latrine pits," Rohland says. "That supports the theory we have that a large portion of the city was used seasonally."

The Uighur rulers' motivation may have been less to copy and more to adapt urban ideas to their nomadic lifestyle. Building a city was an important political gesture. For the Uighurs' Chinese allies, and for other steppe groups that vied with the Uighurs for control, an imposing capital was an immediately recognizable sign of authority. "It's

A Mongol warrior buried centuries after Karabalgasun was abandoned was found in a collapsed house.

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a translation of their claim to power into a language that sedentary cultures would understand—the language of architecture," says Rohland. Franken agrees. "Even these steppe kingdoms need a fixed address," she says. "It could be that the Uighurs saw the big Chinese cities and thought, 'That's what we need, too.'"

For all the tremendous effort that went into building Karabalgasun, the city didn't last long. According to Tang Dynasty accounts, in A.D. 840, less than a century after it was founded, Karabalgasun was attacked by a coalition of rival nomads. The onslaught apparently followed a particularly harsh winter in which cattle died in large numbers, leaving the Uighur Empire weakened and its people starving and vulnerable to assault.

Unlike the sparse evidence of daily life archaeologists have been able to identify, evidence of the attack is easy to find. In and around the palace, they have uncovered arrowheads and spear tips, as well as four-pointed spikes called crow's feet that were designed to always point upward, injuring men and horses who stepped on them. Scorch marks on the mudbrick walls and bits of burned wood show that the central building of the palace complex was incinerated, its contents looted or destroyed. As for the city's residents, they may have been killed or escaped to the steppe. Thus far, no human remains or burials connected to the battle have been unearthed.

Hints of the palace's splendor do nevertheless survive. At the bottom of the well, amid decayed organic material, archaeologists found lacquered wooden rods decorated with a floral pattern, thought to be either imported Chinese handiwork or the product of Chinese craftspeople working locally. Alongside the rods, they discovered metal artifacts including a gilded iron lock and a bronze bell with Chinese characters on the sides spelling out a promise: "Eight times happiness and six times virtue can reach the tenth heaven." "When the bell came up and could still be rung, it was a special moment," Franken says. "You don't get that every day."

The demise of Karabalgasun spelled the end of the Uighurs' dominance. By the time Genghis Khan built Karakorum, almost four centuries had passed since the sack of the city. But its mighty walls and the hill where the palace once stood must have remained an imposing sight. Some evidence suggests that the Mongols regarded the city as a sort of holy place—archaeologists have found Mongol warriors buried in the ruins, including one interred within a house.

There are other indications that Karabalgasun had an afterlife. In a pit atop the palace plateau, the team uncovered the remains of a gyrfalcon, which they radiocarbon dated to several centuries after the city's fall. A healed leg fracture showed that the bird had been cared for after an injury that a wild bird wouldn't have survived, evidence it had been trained for falconry. "Two hundred years later, the place was still important," Franken says, "or the falcon wouldn't have been buried there." A thirteenth-century Persian account of Karakorum mentions the nearby ruins of Karabalgasun and a well and inscriptions found there by the Mongols, suggesting people continued to visit the site.

After the demise of their empire, Uighur groups fled the region, moving west and founding smaller kingdoms near today's Turkestan. In the thirteenth century, their descendants joined Genghis Khan's Mongol horde, who adopted the Uighur writing system. Perhaps the Uighurs also brought with them a long tradition of nomadic city living and inspired the Mongols to build something similar—if not quite as grand—on the steppe. ■

Andrew Curry *is a contributing editor at* ARCHAEOLOGY.

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EXCAVATE

Gracie Carrello, a recent cum laude graduate from Colorado College, gained firsthand experience and learned new skills during the summer at her first archaeological field school. With support from an Archaeological Institute of America (AIA) Field School Scholarship funded by the American School of Prehistoric Research, Carrello traveled to the Greek island of Astypalaia. There, archaeologists are undertaking a rescue excavation focused on a cemetery discovered during construction work in 1995 where more than 3,400 newborns and infants are buried. The remains date to between 600 B.C. and A.D. 100. Inscriptions found in the vicinity tie the site to Eileithyia, daughter of Zeus and Hera, and the goddess of childbirth. Carrello says that working with neonatal remains was especially challenging due to their fragility and the emotional weight. "You have to put the humanity of the people who lost a child at the forefront," Carrello says. "This makes the work more intense, but also more meaningful." Despite this somber backdrop to the work, she gained valuable experience that she will draw on as she pursues a career in bioarchaeology. "There was a bit of learning curve," says Carrello, "but once I got past it, I felt confident in my abilities to carry out all aspects of the work. I would love to go back."

Gracie Carrello

Astypalaia, Greece

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FROM THE FIELD

ADVOCATE

Colombian authorities recently requested that the United States renew bilateral agreements protecting their cultural resources from illegal importation. These requests fall under the U.S. Cultural Property Advisory Committee (CPAC), which advises the U.S. president on agreements designed to safeguard archaeological objects from looting and illicit export. The AIA strongly supported Colombia's request and urged members to submit letters of support ahead of the CPAC's September meeting.

This ongoing collaboration builds on a decade of successful repatriations. In March 2022, the FBI Art Crime Team returned artifacts to Colombia from a 2014 seizure of nearly 7,000 objects taken from the vast collection of amateur archaeologist Donald Miller, which included items from North and South America, Asia, the Caribbean, and Papua New Guinea. The Colombian Institute of Anthropology and History identified the repatriated pieces as belonging to the Quimbaya, Tairona, and Sinú cultures. According to FBI spokesperson Tina Jagerson, since 2018, 82 percent of the FBI's holdings from the Miller case have been repatriated. These include more than 200 Colombian artifacts, reflecting sustained U.S.-Colombian cooperation against illicit antiquities trafficking. The case is now closed, with all possible repatriations completed or underway, highlighting a milestone in heritage justice. In 2025, the FBI Art Crime Team received the AIA's Outstanding Public Service Award for their decade-long work on Miller's collection, including the repatriation of human remains as well as cultural objects.

Repatriated artifacts

EDUCATE

This fall, thousands of youth robotics teams worldwide are exploring archaeology through the annual FIRST® LEGO® League (FLL) challenge. FLL, which includes more than 69,000 teams globally, runs throughout the academic year and culminates at the FIRST Championship in Houston in the spring. The AIA has become a key resource for competing students. We have fielded hundreds of questions, connected teams with archaeologists via Skype a Scientist, and hosted webinars tailored to FLL participants. The first webinar in August drew 4,000 attendees, with expert panelists answering questions on archaeology's fundamentals and challenges. The AIA website features a dedicated page, "Ask an Archaeologist: Unearthing Challenges in Archaeology," with a recording of the webinar, FAQs, and links to a variety of resources, all designed to help teams explore real-world archaeological challenges and the tools used to understand the past.

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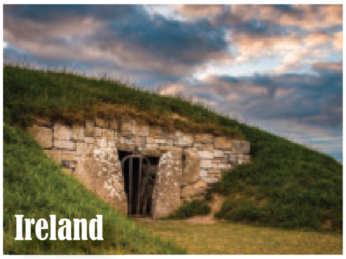

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ARTIFACT

BY JARRETT A. LOBELL

In the game of chess, the opening move known as the King's Gambit is a popular first strike that makes the player's intentions clear—they are here to win. For the king possibly portrayed in this gaming piece, which was used to play *hnefatafl*, or Viking chess, one of his most important moves appears to have been to the hairstylist. The gaming piece was carved at a time when Harald Bluetooth (reigned ca. A.D. 958–986) was king. It was found in 1797 in the burial of a Viking warrior in southern Norway and was recently examined by curator Peter Pentz of the National Museum of Denmark. The man depicted on the tiny chess piece is styled with an ornate coiffure. He sports a middle part and waves that leave his ears visible, and his hair is cropped short at the back. "We haven't had any detailed knowledge about Viking hairstyles, but here we get all the details," Pentz says. "This is the first time we see a figure of a male Viking with his hair visible from all angles—it's unique." The man also sports a long, braided goatee and a distinguished curled mustache.

Pentz believes the gaming piece may portray an actual Viking of the tenth century A.D. This is especially notable as Viking artists rarely depicted people. Although scholars may never know who the man whose likeness appears on the gaming piece was, the artifact has captured one of his good hair days forever. "It's exceptional that we have such a vivid depiction of a Viking," Pentz says. "This is as close as we will ever get to a Viking portrait."

WHAT IS IT
Gaming piece

MATERIAL
Walrus ivory

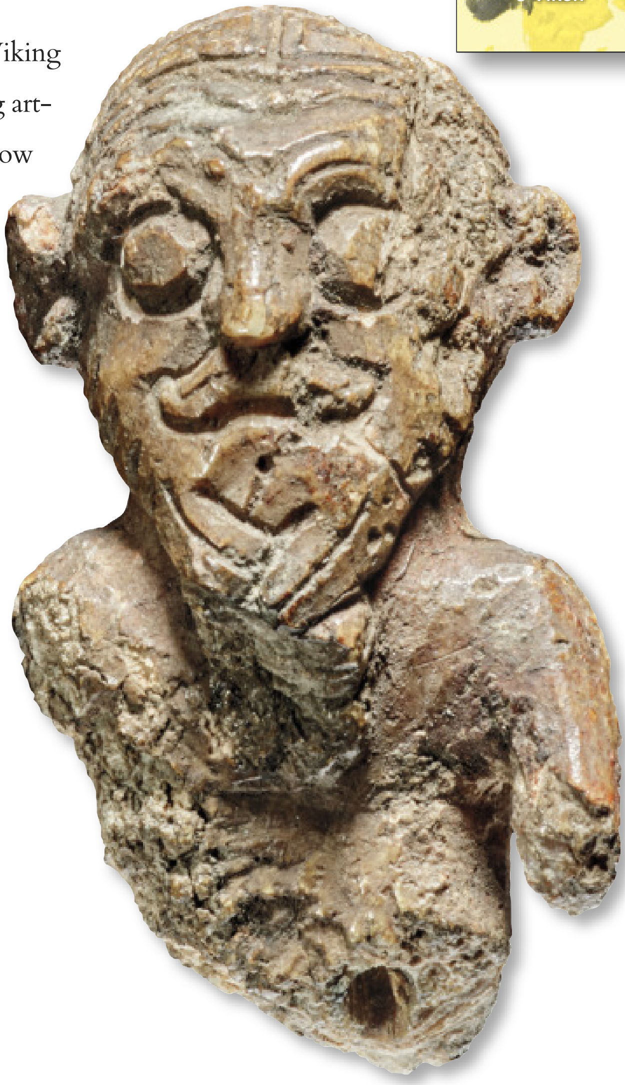
CULTURE
Viking

DATE
Second half of tenth century A.D.

DIMENSIONS
1.18 inches tall

FOUND

NORWAY
Viken



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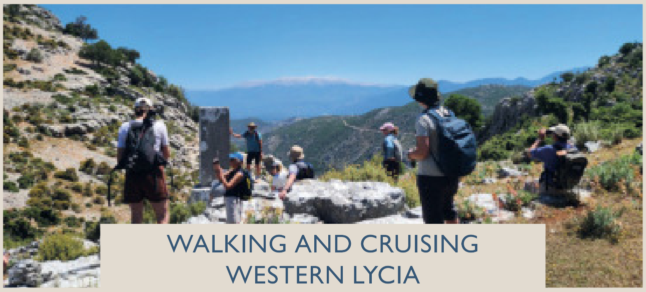

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